1 IN THE CIRCUIT COURT OF THE STATE OF OREGON
2 FOR THE COUNTY OF MULTNOMAH
3 The Estate of JESSE D. )
WILLIAMS, deceased, by and )
4 through MAYOLA WILLIAMS, )
personal representative, )
5 )
Plaintiff, )
6 )
vs. ) No. 9705-03957
7 )
PHILIP MORRIS INCORPORATED, ) Afternoon Session
8 )
Defendant. ) Volume 9-B
9
10 TRANSCRIPT OF PROCEEDINGS
11 BE IT REMEMBERED that the above-entitled
12 matter came on regularly for jury trial before the
13 Honorable Anna J. Brown, Judge of the Circuit Court
14 of the County of Multnomah, State of Oregon, on
15 Thursday, March 4, 1999.
16
17 APPEARANCES
18 Raymond Thomas, James Coon,
William Gaylord and Charles Tauman,
19 Attorneys at Law,
Appearing on behalf of the Plaintiff;
20
James Dumas, Walt Cofer, and Billy Randles,
21 Attorneys at Law,
Appearing on behalf of the Defendant.
22
23
Dennis Apodaca
24 Official Court Reporter
556A Multnomah County Courthouse
25 Portland, Oregon 97204
248-3180

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Thursday, March 4, 1999

P R O C E E D I N G S

(Open court; jury not present:)

MR. GAYLORD: Your Honor, can I put something on the record Counsel and I have been speaking about, and at the same time let Counsel know what we are going to do about it. It is something perhaps for later.

We have a videotape, a little bit edited-down videotape which shows some of the process of making the stuff that goes into the Philip Morris cigarettes. It is tape that was taken in a particular Philip Morris manufacturing plant. It shows manufacturing stuff and a few labels of ingredients that may be corroborated by some of the testimony of this witness.

We showed it to Counsel this morning, provisional to our plan to show it to the jury as part of this testimony. Counsel has brought back after lunch a protective order from the

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Constano case which, on its face, appears to apply to the tape from which these few clips were taken.

My understanding through our sources is that we got this outside of the Constano case. That was produced in other cases after Constano in state cases down in the Southeast and produced under different terms without this protection. I'm telling everybody that's what I understand. I'm not in a position to prove.

If we get the documentation to support that representation, then we will make our offer of this piece of evidence. I don't know if we can do it today. We can do it by tomorrow, if the witness is still here. What I might end up doing is reserving the end of my direct and holding onto the subject of that videotape.

THE COURT: What does the order say?

MR. GAYLORD: Paraphrasing, it says it is protected every possible way.

THE COURT: The Court in the Constano case ordered that the tape be protected and not used?

MR. GAYLORD: Outside of that case, I think it's fair to say.

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THE COURT: That court is what court?

MR. GAYLORD: United States District Court for the Eastern District of Louisiana.

THE COURT: That Court. Is that still a valid order, as far as you know?

MR. COFER: What would happen, Mr. Gaylord would show me a demonstrative exhibit, it seemed okay. There was some in here that recognized it. I think that it's a protective order. We did go get the protective order and it is what it is, as I understand it.

This is based on my understanding. I did not handle that case. Discovery there required the companies to permit filming -- this was a class action that had all the companies as defendants -- to filming various manufacturing processes. The idea, it had proprietary implications.

While that discovery was permitted, it was pretty rigid in what could be done with that. It couldn't be disclosed to anyone. Other companies couldn't see it, so on, so forth.

THE COURT: If we can start from a basis that we can agree that there was an order that

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apparently precluded its use, and that unless there is some basis for me to think that it doesn't apply to this case, we won't use it. If there is a basis, you will bring it to our attention outside the jury's presence.

MR. GAYLORD: We don't need to spend any more time on it. I wanted everybody to understand there is an order under which it's permitted to be given to us and used. If we do that, we will go forward.

MR. COFER: Okay.

THE COURT: We will then have the case of the battling orders from elsewhere.

MR. GAYLORD: I'm sorry?

THE COURT: We will then have the case of the battling elsewhere orders as it applies here. We will see what happens. Stay tuned.

MR. GAYLORD: Mr. Tauman points out to me there is an exhibit attachment to this order which seems to constitute one of those discovery sharing documents that allows somebody to sign themselves into the restrictions and therefore receive the document, exhibit. I haven't looked at it that closely.

It is Exhibit A. "I hereby attest to my

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1 understanding that confidential tapes,
2 photographs and/or information derived therefrom
3 will be disclosed to me pursuant to the terms
4 and conditions and restrictions of the
5 protective order of" -- and it is blank for the
6 date. In the case caption Diane Castano, et
7 al., versus the American Tobacco Company, et al.
8 Skipping forward, "I further agree I will
9 not disclose to others, except in accordance
10 with the protective order," the usual kinds of
11 agreements to be subjected to it and places for
12 signatures and notaries. It has all the
13 appearances of provisional allowing someone to
14 sign onto that order.
15 Now, I don't know that that explains how
16 this tape got into the hands of somebody who
17 provided it to us. It is an alternative route
18 to the one I'm being told.
19 MR. COFER: Actually, having looked at
20 this, I don't think this is applies to other
21 cases. What this is applies it to, I believe, I
22 will run this down, is consultants and other
23 outside counsel viewing this for the purpose of
24 Constano. No, I haven't studied this document.
25 I will look at it.

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There is a provision in the order itself that specifically goes to whether this tape is subpoenaed by other courts or agencies. If another court or an administrative agency subpoenas or orders production of inspection videotapes, videotapes which parties obtained under the terms of this order, such parties shall promptly notify in writing the defendant whose manufacturing facilities is pictured, shall remain neutral in any proceeding involving an effort by other courts or agencies to have access to the videotapes. The Court retains jurisdicition."

THE COURT: That's interesting. You would have to be neutral.

MR. COFER: Court retains jurisdiction.

THE COURT: That the Court retains jurisdiction.

MR. COFER: I have not studied this. I got it over the lunch hour. I will ask someone to look at it. I will see if we can get more insight to it. I appreciate Counsel's situation. I will see what I can learn about this.

THE COURT: Okay. Mr. Tauman, on

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1 transcripts.
2 MR. TAUMAN: I'm sorry, Your Honor. I
3 believe we're probably into my five minutes
4 already. We have two brief matters on the Ray
5 Morgan deposition. I'm handing you our reader's
6 copy of this.
7 There are just two provisions. I would
8 like to take the last chronologically first,
9 which starts on Page 201, very near the end. In
10 fact, I think within ten pages of the end. Line
11 20 through 25. So the last five lines on Page
12 201 and the first seven lines on Page 202.
13 Our objection there is that is simply the
14 counsel for the defendant simply arguing with
15 the witness there. So it is an argumentative
16 question.
17 THE COURT: Let me see if I can get a
18 flavor of what the line of questioning is about
19 previous to that.
20 Who is Mr. Morgan?
21 MR. TAUMAN: Mr. Morgan is a former
22 scientist with Philip Morris, worked for -- and
23 worked for Dr. Farone, and we had a reading from
24 another former scientist of Philip Morris, Ian
25 Uydess.

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1 THE COURT: Right. This questioning is
2 by who?
3 MR. TAUMAN: By the defense lawyer. I
4 think it is the Philip Morris lawyer.
5 Do you recall who it is?
6 THE COURT: Let me back up a minute.
7 MR. TAUMAN: Fowler is the name of the
8 lawyer.
9 MR. DUMAS: Representing Philip Morris.
10 THE COURT: Mr. Tauman, to me that line
11 of questioning beginning at Page 201, Line 20 is
12 responsive to the previous questioning about the
13 witness saying he was told by management. It's
14 just further examination of the reliability of
15 that statement, who was management. The witness
16 ends up saying it was the project leader and it
17 was something he knew.
18 I don't see that that is objectionable.
19 MR. TAUMAN: It is not relevancy. It is
20 the fact that he is in a sense, I guess,
21 badgering the witness by saying, "Who? Give me
22 a person's name who told you that.
23 "I can't give you a person's name,
24 because there is -- nobody is there."
25 THE COURT: It might be badgering if I

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1 was there in person and could tell by the tone
2 of voice and the form of the questioning. I
3 don't see it as objectionable in the context of
4 reading the deposition transcript.
5 MR. TAUMAN: Thank you, Your Honor.
6 The second part, which really comes
7 before, it starts on Page 91 and is rather
8 lengthy. It goes to the last line on Page 91
9 through Page 96, Line 16. So it is a
10 significant portion. And basically in summary
11 it is, again, the Philip Morris lawyer
12 questioning the witness about an episode --
13 there is no indication whether it is permanent,
14 but at least an episode of an agoraphobia or a
15 similar mental disorder that the witness had.
16 THE COURT: That the witness had?
17 MR. TAUMAN: That the witness had. And
18 it seems totally out of place and totally not
19 relevant even in cross-examination as it is.
20 THE COURT: What would be the purpose for
21 offering this, Mr. Dumas?
22 MR. DUMAS: Your Honor, the beginning of
23 the question indicates that it is a current,
24 ongoing condition. He uses present tense. "I
25 have an anxiety problem that I take medications

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for." He also goes on to talk about how he has had this condition for 15 years or more, including the time period in which he worked for the company.

I agree it has some relevance, not a wild amount of relevance, but some. He talks about the medication that he is taking, Klonopin and Adapin; that he has a psychiatric disorder. He is under the care of a psychiatrist during the period of time. I think it can be fairly interpreted to go to issues regarding his memory and his ability to understand events that may have occurred during that period of time, as well as during time of the questioning.

THE COURT: Let me read the full proffer with that in mind. So you are offering it for its bearing on the witness' competence to testify?

MR. DUMAS: His memory, yes.

THE COURT: Just a moment.

Mr. Tauman, what period of time, in terms of the plaintiff's proffer, is covered relative to the periods of time of the witness' employment where this examiner is tracking his condition and his taking of psychotropic

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medications, how do the time periods interact?

MR. TAUMAN: I'm sure that they overlap. So part of the proffer concerns his employment during a time period in which he was taking these medications. I'm not sure how many years he had been there before the incident, the beginning of this, which he refers to as the late 1980s, as this agoraphobia beginning. I think the time that is taken up by this in the transcript, the amount of detail and the fact that the last question and answer he basically says that he does not think that it has interfered, in fact, with his ability to reason and to remember, I think that it creates a balancing under 403 that this is too much and too much distraction and fairly prejudicial to this witness.

THE COURT: Well, I think this falls in the category of perhaps in poor taste by the profferer, but it is not admissible in the theme to show that at the time the witness was making observations, the subject of which is being discussed as direct testimony, the witness was also taking medication; that the witness denies that the medication affected his observations is

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the witness' testimony, but that goes to the weight of that piece of evidence.

There is, as you point out -- the excerpt runs from the bottom of 91 to the middle of 96. I have read it twice now. And the only -- I can only see maybe one question and an answer that I could strike without affecting the meaning of what the witness is saying, and that's the definition of agoraphobia.

If it is all coming in, you may as well want the definition in so the jury can evaluate what it is that the defense is focusing on here. But I don't think that it's inadmissible to show at the time the witness was making observations they were -- the witness was being treated with a medication that the witness describes.

MR. TAUMAN: I suppose too late to renew my objection on the basis of bad taste.

THE COURT: I don't think that's an objection under the rule. Personally, if I saw this happening, I might intervene to see if there was any more tasteful way to bring the issue to the jury's attention without spending five pages of talking about a witness' unfortunate reaction to a chemical imbalance in

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his brain. But I can't say that this should be sustained.

MR. TAUMAN: That's fine. So our transcripts are all in good shape.

THE COURT: Excellent.

MR. TAUMAN: Thank you.

THE COURT: Anything else before we bring in the jury? Do we have 16? Bring them, please.

Dr. Farone, please retake the stand.

(Open court; jury present:)

THE COURT: Good afternoon, jurors.

THE WITNESS: Good afternoon.

THE COURT: Mr. Gaylord.

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DIRECT EXAMINATION
(Resumed)

BY MR. GAYLORD:

Q. Dr. Farone, I think we established a few things about what you learned about the business of cigarette-making at Philip Morris when you came there and oriented yourself. I want to move to a new subject of your orientation and ask you about what you learned about the process of building a Marlboro cigarette.

A. Marlboro specifically, or cigarettes --

Q. If it is different, but if it is generic, tell us the distinctions that matter.

Here is what I want -- I will pose it a slightly different way.

MR. GAYLORD: May I borrow this?

MR. DUMAS: Yes.

BY MR. GAYLORD:

Q. This is a Marlboro. I don't know which one, but it says "Marlboro" and it looks fairly long to me, if that matters.

The question I'm trying to ask you to educate the jury about is what's inside this?

A. Okay. Rather poor diagram of a cigarette, but let's start with that.

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This part is called the rod. This is a filter. And let's think about what we put in it. To most people, a cigarette is a relatively simple device, but during our research at Philip Morris we found some 57 different things you can change in this cigarette to change the way it delivers smoke.

First of all, the coal is here, and when you light it and you draw air through it, the air flows through the rod, exits back. That's called mainstream smoke. Between puffs, you have smoke coming up which we call side stream.

Inside the rod, there are many different compounds that go into making up the cigarette. There are basically three different types of tobacco: Bright, Burley, and something that is called Turkish or Oriental. The Bright tobacco is grown, harvested, the leaves are cut off the plant, and they are flue cured. They are put in a barn where they are heated up, in a heated barn, and it goes through a curing process.

The Burley process is called air cured, or sun cured sometimes, and basically they just cut the stalks, let them dry in the air or the sun.

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There are two different types of tobacco. The curing causes different things to happen chemically within the tobacco. When they come into the company, Bright and Burley are taken apart into two pieces. Each one is taken apart into what is called stem and lamina, or leaf.

I will move this up here so you can see. So you have Burley stem, Burley lamina, Bright stem, Bright lamina.

There is also other imported tobacco over here, which can be like Burley or like Bright. They can be stemmed into lamina or leaf and stem.

Then some of the tobacco pieces, for example, some of the Bright lamina, a disproportionate of it is taken and expanded to make expanded tobacco. The reason we expand tobacco is to pick up more space inside of this rod because if we have less weight in here, when you burn it, you make less tar. The less weight I put in there, the less tar I'm going to make. That's called expanded tobacco.

And then when you try to put this stuff into this rod, it breaks up in little fine pieces that we don't know what to do with. So over the years, they develop various technologies for

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taking part of the stem material and mixing it with let's call it scraps, for lack of a better word, and they make that into an artificial tobacco leaf.

Now, when they put all this together, typically the Bright and Burley part is about 75 percent of the tobacco weight, although it varies, and Turkish and imported tobacco take up the other -- imported types other than Turkish take up about the other 25 percent. And then on top of that 100 percent, if you will, they add a whole bunch of other things; sugar, various materials to make tobacco more plastic in various flavors, flavor compounds. That can add another, oh, 19 to 23 percent by wait.

So you can have in a cigarette a lot of other things besides tobacco. In this scrap material down here, at Philip Morris there were two processes. There are two processes for converting that back into like leaf material. One was referred to as BL, which was so-called blended leaf. It is a band cast process where it is like a cookie sheet, a big, long one, that keeps on going. They mix up all the tobacco, throw chemicals in it, cook it, and spread it out on a

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sheet. When it dries off the cookie sheet, they cut it up into pieces into what looks like leaf.

The other process is RL. It stands for reconstituted leaf. That's the paper-making process. You grind up the material, and if you put the scraps together, you get two parts to it, a water-soluble part and you get a fiber part. You lay the fiber down on a wire, like a paper making-machine, and you put the solubles back on it, and that's called RL.

So it is a long way of answering the question, but you have -- when you put all that stuff into tobacco, I think you can see I have got many different things I can do to the blend. I have got many different things that I can do to the additives that I put on the tobacco. And, in addition to that, I can change the diameter, the length, the porosity of the paper, the length of the filter.

The filter has little holes in the back called ventilation or dilution. I can change the number of holes. I can change the place where I put them. I can change the material the filter is made out of. I can change the density along here. I can run the machine that makes them such that I

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have more dense tobacco in the front.

So there are many, many things that I can do to the physical and chemical structure of a cigarette to change how we can control the delivery of tar and nicotine.

Q. Now, I want to -- you said "to change the delivery of tar and nicotine." I'm going to come back to that and talk about what bearing that statement has on all this. Just a couple of questions from what you have shown us and said to us.

When you were saying "RL," that's reconstituted leaf?

A. Correct.

Q. And you called it a paper-making process. I want to make sure we are not confusing that with the paper of the cigarette.

A. No. It is made like any other paper, like the paper that I just wrote on. Paper is made by taking the fiber, laying it down on a wire, then drying it on the wire, taking it off the wire.

Then if you want to add what we call size to the paper, to give it bulk and thickness, that's solubles that are laid on top of the fiber

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that is on the wire. That gives -- like bond paper is different than regular paper. You can put different things in the paper. It is the technology that is used that is important. It is not part of the paper. It goes inside the rod as part of the tobacco.

Q. Is that part of the tobacco made into something that is like paper and then further processed so it can be used like tobacco?

A. Well, they simply cut it up into pieces and put it in the cigarette so it looks like -- if you take it apart, it looks like there are little, tiny bits of leaf in there. It looks like leaf unless you examine it closely. Then you see, well, the leaf has some natural changes in the morphology or the structure, whereas, this stuff looks uniform like paper.

If you have seen a More cigarette, for example, the brown cigarettes, they usually have that on the outside. It looks like -- a little bit like cigar wrapper. Some cigars actually use it. The cheaper cigars are wrapped in material like that.

Q. Is one of the things you are telling us is that this cigarette in modern times is a highly

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manufactured product?

A. Highly manufactured, highly engineered, machines make 10,000 of them a minute. This is a very, very -- billions are made each year. Philip Morris, at the time I was there, passed the one-billion-cigarette-per-day mark. It is a huge number that you have to make, tremendous amounts of material that have to be handled.

We develop technology, for example, to put those holes that I have here in the filter, very precisely in place, and we couldn't do it fast enough with mechanical means of putting pins in the paper, so we actually developed high-intensity laser technology to punch holes in the paper.

Q. Now, you said that there are 57 things that you can change in the makeup or the processing of the cigarette. I want to get into the subject of those kinds of changes, but I think I want to preface it first.

Let's go back to the subjects of how you came to be part of this research organization at Philip Morris and why you did. And I want you to see if you can put into context for the jury -- put it this way, what were the motivations for

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Philip Morris in changing, altering, manipulating, dealing with these different changes available to the contents of a cigarette?

A. Well, I think we have discussed some of those, but basically you want to maintain the nicotine delivery because that's why people are smoking. And you want to reduce the carcinogen or the mutagens or the bad chemicals that are coming outside of the end.

One way to reduce them is to reduce them overall. That's a general tar reduction. And the other way to do that is to change some of these conditions so that you reduce them specifically. For a specific change might be, for example, that all of the -- most of the nitrate comes into the Burley tobacco. So if you wanted to reduce nitrate, one thing you could do is use more Bright tobacco in your blend.

Another thing you could do, for example, with carbon monoxide burning, generated as a result of combustion, you can change the porosity of the paper. This paper has little, tiny microscopic holes in it that can either let air in through the holes or let gas out. There are many things that you can do to change the composition,

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chemical change, and nicotine delivery.

Q. Okay. In the context of Philip Morris' view of its product and what we have talked about before, that it was aware of its product in both the cancer causation arena and nicotine addiction arena, are these two motivations that you said -- that you stated what it's all about for Philip Morris? That is to say, reducing the carcinogens, the cancer-causers, while maintaining nicotine delivery?

A. Well, I wouldn't limit it to that because that's what it's all about to a scientist like myself. To business people, it also takes on a different characteristic. What makes a Marlboro different than a Winston or a Kool?

So there is different brands that are developed that are usually based around differences in blend so that you can manipulate these things to get different taste. By taste here, so as not to confuse people, that's something that happens in your mouth or back in your throat or in your nasal passages. It is not something that happens in your lung. Your lungs don't have any taste buds, as we all know.

There are two experiences that you have

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with a cigarette. One is the taste part, which happens in your mouth and throat and nose, and then there is the nicotine delivery through the lungs. Of course, it delivers to your mouth and the rest of the mucosal tissue, also. But basically cigarettes, being different than cigars or pipe, it is basically a lung delivery device.

Q. When you mentioned the nicotine delivery and you said there is taste and there is the other thing, nicotine delivery, is the word "kick" associated in the industry with the nicotine effect on the smoker?

A. Yes.

Q. Is that an issue that is viewed -- was viewed when you were there at Philip Morris as a way of speaking about how much effect, immediate effect the smoker gets when they take a puff of smoke?

MR. COFER: Objection, leading.

THE COURT: Sustained.

BY MR. GAYLORD:

Q. Can you characterize what the word "kick" meant in relationship to the sensation of the smoker upon taking a puff of smoke?

A. Well, "kick" is a crude way of talking

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about a very quick response of well-being or to your brain, or however you want to look at it. It is a feeling that you get. For people who inhale smoke, it is generally associated with the first one or two puffs on a cigarette. It is how fast you get that feeling. Generally described by people as being a feel of well-being, mild euphoria, something along those lines.

Q. Okay. Would "rush" be another word for it?

A. "Rush" is a similar -- another synonymity.

Q. Are these ideas behind these words among the things that were discussed and known and accepted among the scientists at Philip Morris?

A. Well, the concept of delivering that initial burst of satisfaction was certainly known. Scientists normally wouldn't use words like "kick" and "rush." That's more what you find among the people that are writing to try to explain that to other parts of the company or to management and other places.

Q. Now, I want to move into asking you to help us understand probably not all of the 57 possible things that could be done to manipulate

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aspects of the cigarette delivery, but select those that are significant to you and tell the jury some things about what you know were done, particularly with the Marlboro cigarette, if you can, to improve or ensure that nicotine impact.

A. Well, over the period of time -- let's talk about the period of the late 1970s when I was there. That's a period of time when low tar cigarettes were becoming more and more popular and there was a movement, for example, from Marlboro Regular, which was the -- had about 16 milligrams of tar and maybe 2 -- I forget the exact numbers. One milligram of nicotine. Remember, when I use those numbers, they are FTC tar/nicotine numbers, and they really don't relate to what smoke is.

We also had in-house technology where we study how people smoked cigarettes, so you could program a smoking machine to smoke like a person, more like a person. Broke it up into different kinds of smokers: People who puff deeply, people who held the puffs longer. That device was called a human smoke simulator.

We studied the delivery of the cigarettes in these 57 parameters. And the 57, by the way, comes to mind from the fact that the person doing

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this modeling of how we calculated all this stuff told me there were 57. I'm not quite sure I have seen all 57 written down, but I have -- put to the test, I probably could do 50 of them.

Q. Who was that person?

A. Dr. Homer Hartung. In any case, the manipulation is, for example, if you were to plot tar and nicotine and you looked at the period from, oh, the '60s to today, what you would see is that -- let's do tar first.

Tar comes down over that period of time and nicotine comes down and curves like this. This is the nicotine curve. This is the tar curve. So what is happening -- this is time. What's happening is if you look at something like the nicotine to tar ratio -- and these scales aren't exactly right. These start out being something like -- this is like .06 or .07 of that.

Then you get into a certain period of time, you find that this is a larger percentage of the total material that is delivered. In other words, the nicotine can go up as high as like .1 of the tar.

So the modifications to the structure that were -- things like how you put in the

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dilution holes, what porosity of papers you use, and the changes that you make, were engineered such that the nicotine-to-tar ratio changed, especially during the '70s and subsequently, to deliver more nicotine relative to the tar.

Q. All right. Now, I hear you saying that the nicotine is going up, but I see the curve is going down. Is that because you are saying that the percentage of the total combined thing, that is, nicotine, is what is increasing?

A. The important issue to understand is that the total amount, according to the FTC tests, goes down of both. However, the ratio of nicotine to tar goes up. And people don't smoke like the FTC machine. If you go and measure it, you measure the way they really smoke, they get more of both.

As mentioned before, if 7/10th of FTC milligrams per cigarette of nicotine was acceptable back in the '60s, probably when you lowered the tar in the cigarettes to the one we found to being .2 to .3, but probably the smoker and the smoke simulators indicate to this smoker's getting the same amount of nicotine. In other words, their increase in their puffing or the duration or the pressure draw, how hard they draw

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in order to compensate for that nicotine and in order for them not to get as much carcinogen as possible, the change in nicotine/tar ratio reduces relatively the amount of tar.

Q. Okay. If you are going to continue to make and sell a product that is addictive with nicotine, then would you say it is a good thing, in light of that, to reduce the amount of tar and carcinogens that you supply along with the nicotine?

A. That was the premise, yes.

Q. You mentioned compensation, and the jury has heard about that from other witnesses. I want to ask you, is the concept of smokers changing their habits to compensate and get more nicotine from a lower nicotine cigarette something that was understood at Philip Morris when you were there?

A. More than understood. We developed special techniques for measuring it, and we tested products in terms of delivery, as I mentioned, using a device called the human smoke simulator, where you had machines smoke the way you could collect data off of people so you could, in fact, engineer the cigarette by making changes in these different properties to deliver acceptable levels

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of nicotine.

Q. The human smoke simulator is not the same thing as the FTC machine?

A. No, it is a similar kind of machine. But the FTC machine -- see if I can remember all this. We used about 30 milliliters, 30cc puffs, and we did it maybe nine or ten times, seven to eight times, depending on the length of the cigarette.

Length is an important factor, regular versus 100s, 85 millimeters versus a hundred millimeters versus 120 millimeters. Those are the three lengths out there. So normally you might take a puff of -- so many every 30 seconds. It turns out some people might take a puff every 60 seconds. They would take -- 60 milliliters. One-second puffs or two-second puffs. They double the -- I misspoke. I confused that. It is 30 milliliters in the FTC test, 60 to 70 milliliters in the human smoking. It's maybe one-second puffs versus two-second puffs. All those things change between the machine and the human.

Q. Let me move into some more specifics now.

In view of the understanding that we have about the things that were -- the goals of making these changes, tell us about some of the things, I

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guess I will -- rather than start with all 57, let me ask you about a specific one that we have heard a little bit about.

Ammonia. Is ammonia -- does ammonia have to do with at least one or more of the variables that can be changed or manipulated to affect the outcome of smoking a Marlboro?

A. Yes, it is. Basically, we talked about this mainstream smoke --

Q. Yes.

A. -- before. Let's remember what we mean by "smoke." We have got these liquid particles called tar, different sizes. In between them, we have got gas. And you have this 19 to 23 percent here that I talked about what you add.

So now let's add something like urea, diammonium phosphate, glycine, amino acids. They are all things. They are not ammonia, but when you burn them they give off ammonia. They turn into ammonia when you burn them. That's one of the five products of combustion of Marlboro.

Q. You are going to get into some chemistry about this. I want to have an understanding for myself about ammonia and what it is. Jurors may have some household familiarity with ammonia, I

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suppose, as a cleaner?

A. Right.

Q. Is that using the same word, it is the same thing?

A. Well, sort of. The vapor over the top of that bottle is ammonia. What is actually in the solution is a little bit of ammonia.

Now, chemically -- let me write it here. Chemically, ammonia is one nitrogen connected to hydrogen. That's the gas ammonia. When you put it in water, it becomes --

Q. Move down to the lower part of the page so you have open space.

A. It becomes this, called ammonia hydroxide. It turns into an ammonium compound.

But the ammonia itself, the ammonia itself is what we're interested in. If you put an ammonium compounder urea or amino acid, which when burned gives you ammonia, then ammonia will travel down this route. It will be part of the gases going down the route.

Q. Okay. Now, I want to stop you one more time. I'm remembering that we heard in the beginning of the case that ammonia is a common kind of stuff that is in lots of things, including

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lots of things that we consume, eat, food, for example.

A. That's correct.

Q. I think we were told ammonia is in bread, it is in beer, it is in Twinkies. Is it true that there is ammonia in lots of different food things?

A. Yes. It is true that there is ammonia in all kinds of food things. But when you inhale ammonia, that's different than eating things that have ammonia in them. Your stomach has the ability to deal with it. Your lungs have lesser ability to deal with things like ammonia.

Q. As a general proposition, is there a significant difference, or at least a possibility of significant difference between the health effects of eating something and the health effects of inhaling that same material?

A. Let me go back to some of the products I mentioned earlier. Let's take the hair spray. We don't eat hair sprays, but we don't want to inhale them, either. So something that might be safe in margarine or toothpaste might not be safe in hair spray. Because in margarine or toothpaste, you eat it, it goes into the stomach. Your stomach has acid in it. It is an oxidized environment.

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You can get rid of it. Sometimes things are declared safe for use of foods, but if you inhale them, you are in trouble. Let me give you a specific example.

I mentioned Close Up, a name of toothpaste. They are made from silica. Ground-up sand in toothpaste. You can brush your teeth with that, no problem. You can swallow it. It is used in food. But I would advise no one to inhale sand, silica. It is acceptable for one use, but not another.

Q. Completing that example, is inhaling silica something that has been established as a significant health problem when it occurs in the workplace or other environmental situations?

A. The term is silicosis. It is definitely not a good thing to do. Things that are approved or used in foods and toothpaste and cosmetics -- you never put silica into a hair spray, for example, because people have a tendency to inhale little bits of that.

I want to distinguish between silica and silicone. If you go back and read your hair spray bottle, you will find there are sometimes silicone materials, but it is not the same thing.

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Q. Just another -- going back to this morning when you talked about your Lever Brothers work. Did I understand there you were overseeing all of the product approval and the work to determine whether there were health hazards to various new products or changes in products for Lever Brothers?

A. That's correct.

Q. Is the question of how the way a person might become exposed to the material an essential consideration in deciding whether or not something is a safe thing to put in a body?

A. Yes. For example, for toothpaste we worry about the route of administration through the stomach, the aerosol, you worry about little bits that might be breathed, even though you are only going to try to use it on your hair.

For shampoo, you worry about what happens to your eye, not eating it. Food products like margarines, you are extremely concerned about the route of administration through the stomach, but you don't really care -- you don't study whether it is inhaled, for example.

Q. Okay. Now, with that background, and I asked you to talk about ammonia a little bit, go

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forward, if you will, and tell us about ammonia and its relationship to the 57 things that can be manipulated.

A. If you put an ammonium compound in the cigarette, as you burn it, urea is not an ammonium compound, but it degrades into ammonia, the ammonia sweeps down the rod. And also when you burn things, you give off a little bit of water, so what happens is the tobacco becomes wet, or moist.

Now, the moist tobacco has in it nicotine and other alkaloids. Besides nicotine, there is nornicotine and cotinine. They all are known in organic chemistry as organic basis. They, like other alkaloid materials, codeine, caffeine, cocaine, have a property that if you make the solution that they are in, or the material that they are in more basic, you, in fact, drive them off. You can sweep them into the gas phase.

So what is happening is the ammonia is hitting the wet tobacco. I'm going to turn this over and draw a little piece of tobacco here. So we have nicotine inside this piece of tobacco. I have got a stream of ammonia coming into the tobacco. Inside the tobacco it turns into a base

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that locally increases the basicity of this a little bit and out comes the nicotine. And there is what we call in chemistry an equilibrium established, and by putting the ammonia in there, you push that nicotine out into the gas.

Now, if we come back to this aerosol --

BY MR. GAYLORD:

Q. All right.

A. -- up here, that means that when it comes out the end of the cigarette rod, more of the nicotine is between those particles, the nicotine is actually inside the gas instead of being in the particles.

Q. Okay. Now, I want to relate that concept to some other things that we heard about and see if they all fit together.

You said you increase the basicity, I think was the word.

A. Right.

Q. And that's -- the jury has heard about acid and base, and those are two ends of the same line, aren't they?

A. Yes. Acid is opposite from base. And a chemical terminology which they also heard, called pH. Low pH is acid. High pH is base, but it

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isn't like low and high. There is a total continuum range.

As you move along that continuum, without getting too technical, the scale actually is like the Richter scale for earthquakes. It goes up by orders of ten for each little bit. It is not like a linear scale.

Q. pH is something like goes from zero to fourteen; is that right?

A. No, not right. You can have pH below zero, if you have a very strong acid. You can have pH above 14, for those things -- common things that we know.

Some examples: Coffee has a pH of around two to three. Water has a pH of 6.5 to 7. Lime has a pH of about 12 to 13. Most things we know about in nature, they run from 2 to 3 to about 12 to 13. So that's the range, 7 being what we call neutral. And water, just pure, plain water, is pretty close to 7.

Q. Now, back to ammonia. What I understood you to say is if you put something into the cigarette that becomes ammonia when it burns, the ammonia, you used the word "sweeps."

A. Correct.

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Q. That sounds like it is the smoke or the gas?

A. It is the gas.

Q. The gas of ammonia goes back through the material that is in the rod of the cigarette. And that makes nicotine come off of the tobacco?

A. Nicotine comes off of the tobacco into the gas phase, and that nicotine is called freebase. It is freebase nicotine, as opposed to protonated or bound nicotine. It puts more nicotine into gases.

Q. Going back to the first thing we talked about this morning about aerosol. If you took an aerosol that you showed us has droplets in it and it has gas in between the droplets, is this changing the amount of nicotine that is in that aerosol, the total amount?

A. No.

Q. Is it just changing how much of that nicotine that is in there is gas instead of liquid?

A. There are conditions -- before, I said no. But there are conditions under which you can change the total amount, but the basic effect is to change the amount that is gas compared to the

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amount that is liquid. And you can, for example, envision a situation where all of those particles are so big that you couldn't inhale them. Okay. In which case, the only nicotine that you would get by inhalation was the part in the gas phase. As I make the particles smaller, I can get more and more from the particle.

Q. Why would anybody want to have an effect on the cigarette that makes more of the nicotine be in the freebase form?

A. The correlation is that as you do this, you can lower tar cigarette, lower nicotine cigarette, elicit a response of greater taste, better satisfaction, it is working better. So the idea here, the hypothesis that we were basing the development of this phenomena on is if you put this nicotine in the gas phase, it is going to make a more acceptable cigarette.

Q. Okay. Is ammonia something that is only in a cigarette if it is added to it, or is there ammonia in a cigarette without any of this happening?

A. Ammonia is present naturally. There is more ammonium -- it is ammonium compounds that generate ammonia when they burn. There is more in

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Burley than there is Bright. The tobaccos have naturally different pH; so it is always there. The question is augmentation, or adding something to it to enhance an effect.

Q. Dr. Farone, I'm going to ask you to look at an exhibit when Ray finds it here.

I will ask you, first, was the effect of increasing the things that would turn into ammonia when they burned in the Marlboro cigarette known, discussed, recognized, and made use of while you were at Philip Morris?

A. Yes.

Q. Was that done for purposes of affecting the amount of freebase nicotine that was in the smoke?

A. Doing it results in the increase in freebase nicotine. The ultimate reason why you do it is to provide a more acceptable product than low tar.

The ultimate effect -- let me put it another way. I don't think that the people selling cigarettes cared why it happened. The fact that it happened is what they are interested in. So the ammonia content became associated with the success of the Marlboro brand.

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Q. And you used the word "acceptable," and we used that again this morning. That's acceptable from the perspective of the user satisfaction with the product?

A. Yes. Let me maybe explain acceptability.

If you think about lighting a fire someplace, like in your fireplace, and then sucking in the smoke from your fireplace, normally you wouldn't do that. You rebel against that. You have to ask yourself why would you do it with tobacco? The reason you do it is because of nicotine, because of the reward that you get from sucking in that smoke. So if you don't make it acceptable, people aren't going to do it.

Q. Was that part and parcel of the awareness of the company at Philip Morris, that the addiction to nicotine or the chemical dependence on nicotine was the reason their customers were smoking their products?

MR. COFER: Objection.

THE COURT: Basis.

MR. COFER: It is beyond the motion this morning.

THE COURT: Rephrase your question.

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BY MR. GAYLORD:
Q. When you have said that the sellers of the cigarettes didn't care what happens, they just cared that it happens, is that -- when you say they care -- they cared that it happens, is that in relationship to their awareness that the users of their cigarettes were using them to satisfy a chemical dependence on nicotine?
MR. COFER: Objection. Same objection, same basis.
THE COURT: Objection overruled. Go ahead.
THE WITNESS: Yes. We saw documents this morning that indicated that.
BY MR. GAYLORD:
Q. Now, I wanted to show you a document, Exhibit 70, that is -- it is in evidence as Plaintiff's Exhibit 70. It is a July 30, 1969 document from BAT, a different company that shows some test results from comparison testing of different brands of cigarettes, including Marlboro. And the part that I am interested in is the one showing different ammonia. Do you see that? I think it is the top lateral column.
MR. DUMAS: Your Honor, I think we have a

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matter for the Court. Maybe a sidebar briefly.

MR. GAYLORD: Okay.

(Discussion at the bench off the record.)

THE COURT: Jurors, we need to take a matter up outside your presence. Feel free to stand and stretch while we're away. Remember not to talk about the case.

(In chambers:)

THE COURT: I remember that we covered an exhibit having to do with ammonia content testing and coming from other -- another source outside of Philip Morris, but I don't have an aided recollection of what the outcome was.

MR. THOMAS: I can represent to the Court -- this is a clerical matter, I looked at the Plaintiff's Exhibit list. It does show this as admitted.

MR. DUMAS: I think that's accurate, Your Honor. Mr. Randles isn't here. I know he was involved in that a lot more than I was. My recollection was this came in under dispute, and I thought the Court -- I could be wrong, but I thought the Court placed some reservations or some limitations on how it could be used.

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And -- I will let the Court --

THE COURT: I'm trying to see if I have any notes about it. This is the part where I was asking you all if you could provide a chart of the summary of the in-limine rulings. That was going to be helpful, and I thought you were going to do that.

MR. DUMAS: The in-limine rulings. Okay, we will do that.

THE COURT: I thought you were going to do that.

MR. DUMAS: I thought we were, too. We will be sure to get that done tonight.

THE COURT: Does someone have a transcript of the in-limine proceedings?

MR. DUMAS: I think this was argued during the exhibit admissibility.

THE COURT: Have you obtained those transcripts? You have been obtaining everything else.

MR. DUMAS: I think we do.

THE COURT: Let's see if we can find it.

MR. GAYLORD: I checked with Jim Coon before I used any of these documents and I understood there was one not in.

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THE COURT: Thank you.

(Discussion in chambers off the record.)

THE COURT: We have had an opportunity off the record to consult the transcript of the proceedings on February 22, at which admission of Exhibit 70 was discussed. The defense made a hearsay objection which I overruled under the 803 (16), ancient document exception to the hearsay rule.

There was considerable colloquy and discussion about a 403 objection about the probative value of the document -- of the evidence in Exhibit 70 being outweighed by its prejudicial impact. Mr. Randles made a lengthy argument then. Mr. Coon did, as well. I was reluctant to rule, it looks like, as my memory is refreshed, ultimately on the issue of 403 and wanted context of the trial in which to make that final call.

I think we are now in context. Let me have the plaintiff's best argument about 403, the defendant's best argument. I will rule, then we will proceed.

MR. GAYLORD: I think I would just say

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that in view -- I'm reminded by the argument from the transcript that was just paraphrased and read to us that I don't think the point of contest over the issue of ammonia is on the question of whether or not Marlboro had significantly higher levels of ammonia than various other brands. Therefore, I don't think this document and its use to show that measurement is prejudicial to the defendant. I think it is relevant, but -- outweighed relevance by any prejudice.

The issue that I understand defendants want to raise or continue about ammonia is whether or not it has the effect upon pH and whether or not that effect has the effect on smokers that we contend for it. I don't think it is a question of whether or not Marlboros had more ammonia.

I would point out, by the way, this witness has personal firsthand knowledge of that fact and can testify to it with or without the document, but the document is good for corroboration. We are entitled to have the corroboration from it. The fact that he can testify to it substantially reduces any sting

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1 from prejudice by the use of the document.
2 The witness has already said, if I can
3 add, Philip Morris intentionally manipulated the
4 ammonia delivery of the smoke in the cigarette
5 for that purpose.
6 THE COURT: Is Viceroy a BAT brand?
7 MR. COFER: It is a Brown & Williamson.
8 THE COURT: Which is BAT --
9 THE WITNESS: BAT owns Brown &
10 Williamson.
11 MR. DUMAS: Your Honor, I think the
12 analysis should be the same as we just went
13 through with regard to the R.J. Reynolds
14 document. I suppose the ancient document
15 exception does apply, although I don't
16 understand the evaluative opinion subject
17 exception that applies to public records doesn't
18 apply to ancient documents, but I'm not arguing
19 that.
20 To me, Your Honor, Counsel's own argument
21 undermines his argument. He doesn't need this
22 document. He has somebody who can testify on
23 some of the aspects of this. He can so testify.
24 I note this document provides at the top "added
25 ammonia in salts: Stating apparently salts were

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1 added. It provides, according to this
2 defendant, by BAT -- that PM didn't have any
3 involvement with -- not only is the ammonia
4 higher in Marlboro, but the tobacco is higher in
5 Marlboro cigarettes. It speculates. Although
6 it is difficult to speculate as to the reasons
7 for applying ammonia salts to tobacco, Your
8 Honor, I think the prejudicial value of this
9 document outweighs its probative value. I'm not
10 going to make it a longer argument than that.
11 It is a hearsay document. I realize the
12 exception applies to it, but we are not in the
13 position of cross-examining the people who did
14 the test, why they did the test, or
15 cross-examine their motives for doing it.
16 THE COURT: Anything else?
17 MR. GAYLORD: That's a hearsay objection.
18 Relevant evidence is admissible under 402.
19 MR. DUMAS: Yes, it is, but not when the
20 prejudicial value outweighs the probative value.
21 That's the basis, not hearsay.
22 THE COURT: Here, the prejudicial
23 argument goes to the inability to cross-examine
24 the science that underlies the conclusion that
25 ammonia is .43 percent in a Philip Morris

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1 cigarette, .46 in a Marlboro cigarette, .11 in a
2 Viceroy cigarette.
3 I'm really not able to distinguish what
4 we're doing right now from what we did this
5 morning in a principled way on the RJ Reynolds
6 document. I do want to be consistent. I don't
7 see you need the evidence, first of all. That
8 is, if I'm required to evaluate it in 403,
9 because you have a witness that has knowledge of
10 the actual ammonia content of a Marlboro
11 cigarette, and that they were, in fact, added
12 compounds, which when burned, produced ammonia,
13 in addition to being naturally occurring. I
14 think there is concern about the risk that this
15 document be misapplied by the jury because it is
16 coming from a source that is wondering about,
17 one, does this, when we have already got a
18 witness who has said it is done -- it is done to
19 improve the impact, to improve the kick, to
20 improve the acceptability, to improve the
21 experience of the smoker.
22 This little qualification that the
23 defense wants to add to that line of logic or
24 dispute about that line of logic, which is to
25 say, "And that has no impact on addiction," is

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not really advanced by this document one way or another. That's really the controversy between both sides on the pH of smoke.

I'm sustaining the objection because I believe it is the right outcome. I think the analysis was correct this morning on the RJR document, and I just don't see any principled difference between the two.

MR. GAYLORD: I accept your ruling. I want to have said I think the arguments defendants make about this in support of their claim that it is prejudicial, in fact, undercuts the claim that it is prejudicial, because they are consistent with whatever part this witness has to say about that. The fact that they are consistent about what the witness has to say doesn't reduce the relevance. It makes it corroborative. It doesn't reduce their prejudicial impact.

THE COURT: Excuse me, I interrupted you. What is corroborative is the results of the qualitative analysis, what Mr. Coon called reverse engineering in terms of somebody measuring that Marlboro cigarettes had more ammonia than Viceroy cigarettes.

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1 If the defense takes the position in
2 their case that is not a fact, then we are back
3 to where we were with the RJR document. The
4 prejudicial argument that the defense makes is
5 significantly undercut because there isn't a
6 controversy at present about the addition or the
7 content in the sense that this witness is going
8 to talk about.
9 If they say there are no -- and
10 Mr. Randles said that to some extent in his
11 argument, that is more part of their case than
12 this. At this stage, this isn't the only piece
13 of evidence. So that factor weighs against you.
14 It is subject to misinterpretation, because
15 there is a lot of text on the document outside
16 of the actual measurement of how much ammonia
17 there is.
18 Those are really my two main reasons for
19 concluding that it is over the line on the
20 prejudice side. But if the defense wants to
21 argue that a Marlboro cigarette does not have
22 more ammonia than a Viceroy or a this or a that,
23 then it is unfairly prejudicial not to have it
24 in over the 403 objection. That would my
25 leaning.

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So I'm sustaining the 403 objection which I reserved at the time of the hearing. Thank you for producing the transcript.

Let's proceed.

(Open court; jury present.)

THE COURT: Jurors, I made a ruling that is going to require a little bit of reorganization, so we're taking the afternoon recess right now for your purposes so that your time is better used as soon as there has been an adjustment.

Please leave your notes on the chair. Don't discuss the case.

We will go in 15 minutes, please. Thanks very much.

(Open court; jury not present.)

THE COURT: I did not personally keep a list of all of the exhibit rulings that remain open. It would be, I think, very useful for

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everyone to have a running list of those rulings, like the last one on Plaintiff's 70, which after lots of discussion the other day I ended up not ruling on because I wanted to hear trial evidence to make the ruling. And to the extent someone can generate that, I think it would be useful for everybody so we don't rely on our poor memories when we get to these things. We will take 15 minutes.

(Recess)

(Open court; jury present:)

THE COURT: All right. Jurors, thank you. We are ready to continue now.

Mr. Gaylord.

MR. GAYLORD: Thank you, Your Honor.

BY MR. GAYLORD:

Q. Dr. Farone, stay seated there for a while. I'm sure you will be on your feet again.

This ammonia question. First let me ask you, are you aware of documentation in Philip Morris from well before your time there to

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the effect that the amount of ammonia that was sort of present naturally in the cigarette products was a, quote/unquote, trace amount?

A. Aware of both, yeah, the documentation as well as specific results that we obtained ourselves.

Q. I will represent to you that one of the things in evidence is Exhibit 42 from 1961 that shows trace amounts of ammonia in the tobacco products. Is the amount of ammonia -- amount of ammonia we are talking about as a result of the techniques to manipulate the gas phase nicotine in the Marlboro a trace amount?

A. No.

Q. What did you have to do with analyzing or understanding that ammonia and nicotine delivery question while you were at Philip Morris?

A. We developed technology -- when I use the word "we," people working for me included Dr. John Lephart, L-E-P-H-A-R-T, that developed a technique that allowed you to look at the smoke exiting the cigarette on the fly sort of as it exited, and to chemically analyze the smoke directly as it came out of the cigarette.

So we could look for ammonia and we could

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look for carbon monoxide and other chemicals very, very quickly by this technique. It was an infrared technique. You passed a beam of infrared light through the gas out the back of the cigarette, you could instantaneous, almost a matter of milliseconds, determine the chemistry.

We started analyzing our own products that way. We started to analyze competitive products that way, and we used that for a while. In about 1980 or so, we determined that the competition, specifically R.J. Reynolds and the Winston brand had started to put ammonium compounds in their product.

The way we learned that, we saw the burst of ammonia go way up and we saw the increase of gas phase nicotine. And so that led us to go look at the analysis of the tobacco and made the determination that R.J. Reynolds was starting to add ammonium compounds to their products to make the subjective response of that product more like a Marlboro.

Q. We have heard about the tar derby or the tar wars. Was this something that could be characterized as the ammonia wars?

A. Well, there was considerable concern that

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if, in fact, the success of the Marlboro brand was dependent upon the relevant amount of ammonia compared to other brands, that now everyone would start putting ammonia in and that there would be an increase in saleability, shall we say, or acceptability of the competing products.

Q. Now, just a couple of reminders. I'm not going to take the trouble to show them again; they have been seen several times.

Exhibit 58 is a March 31, 1966 report on nicotine and smoke pH from the Philip Morris documents that we have, and it has a statement, "Nicotine delivery can be controlled via filler or smoke pH adjustment." And the jury has seen that several times.

Is that a statement of the phenomena you have been describing?

A. It is related to the phenomena. As I said before, when the ammonia gas strikes the wet filler, it will drive up the pH or basicity of the filler, driving up the nicotine. Then if that were to further decompose, you would also see an increase in the smoke pH. But it isn't necessary for the smoke pH to go out to deliver more nicotine by sweeping ammonia gas through the wet

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filler. Usually does, but it isn't necessary.

Q. Exhibit 92 is another document that the jury has seen. Let me remind myself the date before I refer to it, which is the Schori Behavioral Research Laboratory report of October 1974, smoke impact from a psychologist's vantage point.

"Suggesting that smoke impact is due to nicotine, however, is nothing new. The important factor, though, is not the amount of nicotine in the smoke per se but rather it is the amount of free nicotine in the smoke, which determines the degree of smoke impact."

I want to relate that phrase "free nicotine" to what you have been telling us about ammonia.

A. The term "free nicotine" means a freebase, which is -- or unprotonated, the kind in the gas phase. It can also be a small portion of the nicotine that is in the particulate phase.

Q. Another document is Exhibit 142, I think you have some familiarity with. I will tell you it is a February 5th, 1992 Philip Morris document from Dr. Gullotta -- is it Gullotta (enunciating), is that how it's pronounced?

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A. Yes.
Q. In which he outlines the 1991 accomplishments and includes this statement, that they, quote, demonstrated that systematic relationship between increases in filler pH and increases in gas phase presumably unprotonated nicotine, close quote.
First off, was that a new concept or demonstration in 1991, to your knowledge?
A. No, that's a continuation of the same hypothesis, or same rationale.
Q. And in the next item on that same report in 1991 Dr. Gullotta wrote, quote, demonstrated that the addition of basis to cigarettes. That's this freebase, one of the ways to do it would be the ammonia?
A. Yes.
Q. "The addition of basis to cigarettes enhances subjective and electrophysiological responses." Is that a finding consistent with what you have told us about was being done and known while you were at Philip Morris?
A. Yes, it is.
Q. And is that enhancement of subjective and electrophysiological responses another way of

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1 characterizing the goal of impacting the smoker by
2 adding ammonia to the cigarette?
3 MR. COFER: Objection, leading.
4 THE COURT: Overruled. Go ahead.
5 THE WITNESS: Yes, it is.
6 BY MR. GAYLORD:
7 Q. Now, I want to ask you to share with the
8 jury just some examples of other things. You told
9 us there is 57. We are not going to go down the
10 list at all. But there are one or two other
11 significant parts of the -- significant examples
12 of the choices of things that could be manipulated
13 in the Marlboro that were part of your knowledge
14 and part of your work at Philip Morris that were
15 used for purposes of enhancing smoker impact by
16 nicotine.
17 A. Okay. When we talk about Marlboro, we
18 have to understand that there is a variety of
19 Marlboros. There is Marlboro Regular, Marlboro
20 King, Marlboro Light, Marlboro Menthol, and so
21 there are slight differences in the composition of
22 all of those products. There is no single
23 Marlboro.
24 But, in general, if you change the paper
25 porosity, the place were the ventilation filters

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are, we are already changing the length between the Marlboro Regular and Marlboro 85 and the Marlboro Kings, the difference of 85 to a hundred millimeters. That will automatically change the delivery.

So because -- depending upon how much tobacco you have and how hard you are drawing it, the hundred-millimeter cigarette has more tobacco in the rod. If you puff kind of the same, you are not going to create the same duration of puff. It has got a higher pressure to get that smoke from the beginning front end of the cigarette to the back end within all of those. Each one of those things was looked at individually, and you would change the physical parameters that you could to make the product as consistent as you could.

One thing we probably ought to be aware of is that a cigarette, a tobacco that they used in the cigarette, I made a list of all the different kinds of tobacco ingredients, it is not all from the same year. In other words, they don't grow 1998 tobacco and use that in 1998 cigarettes. They use from this year, for example, 1999, they will be using some tobacco from '98, '97, '96, '95. They go back -- well, when I was

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there, anyway, they went back as far as five years.

The reason for that is that the alkaloid content. That's nicotine, nornicotine, or things like sugar and other contents change from season, from year-to-year, and also among the grades that they can go out and buy. So you have a lot of latitude in terms of manipulating the product simply by how you blend the different years, how you blend the different tobaccos together.

Q. Let me ask you now a somewhat more pointed question about the question of manipulation.

We told the jury in the beginning of the case that there was something about sugar that was one of the things known and understood and used for purposes of enhancing the nicotine effect of cigarettes at Philip Morris. Is that a starting point for a story you can tell us?

A. Well, yes. First thing we have to realize is that before you talk about manipulation, you talk about discovery. In other words, you have to have some finding that leads you to something that is usable.

In this particular case, I characterize

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it more as a finding than -- it starts off and, look, why do we see certain effects with certain products where the nicotine seems to be giving more of an effect? One of the determinations that was made at least within some rat studies going on, one of the degradation products of sugar, it is not only from sugar, but primarily it can come from sugar and tobacco, a compound called acetaldehyde.

Q. I'm going to have you write that one down for us, if you wouldn't mind.

A. Sure. (Witness complies.)

Acetaldehyde is important for several respects. First of all, it is a carcinogen. Second of all, it is one of those things that if you were to ingest it, it gets turned into acetic acid, like vinegar, relatively harmless.

If you inhale it, acetaldehyde is not good. It is related to formaldehyde for preserving specimens. This is a decomposition byproduct of sugar. One of the scientists, Dr. DeNoble, found there would be an interaction between acetaldehyde and nicotine which opened up the thought process, if you will, that there are many compounds that are in smoke that enhance the

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effect of nicotine.

The research laboratory I think I mentioned earlier had been working on nicotine analogs. Those are chemical compounds that kind of collect nicotine, but they are different. The reason for that, nicotine has an unfortunate side effect of changing your heart rate, increasing it. It is linked to some cardiovascular problems. It has two effects, one on your central nervous system and one on the peripheral nervous system. If you could eliminate the bad effects and keep the good ones, that would probably make a safer material. So we were looking at those compounds.

Sugar played a role in both things. First of all, sugar, as we say, provides acetaldehyde, which maybe could increase the effects of nicotine. The other thing, if you mix sugar with protein or amino acids and cook it, Philip Morris called those cooked flavors, and you put those in a cigarette, you would create a class of compounds called pyridines and pyrazines. Pyridines, the simplist nicotine analogs are pyridine compounds. Pyridine itself is a simplest analog of nicotine.

Sugar was implicated in two ways; one in

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acetaldehyde and this cooked flavor, where the objective was to add things to a cigarette that would enhance the effect of nicotine.

Q. Now, you mentioned Dr. DeNoble, and Dr. DeNoble is one of your colleagues at the research center of Philip Morris?

A. Yes. He didn't work for me. He worked in Dr. Dunn's group under Dr. Osdene.

Q. That was the group you told us about earlier that did the testing to implement things that your group might have come up for possibly improved safety of products?

A. That's correct.

Q. And did Dr. DeNoble have a specialty of testing animals, rats in particular?

A. His specialty, he had a laboratory where he used rats as a medium for testing the effects of nicotine, yes.

Q. And in the process of rat testing did he discover that there was an enhancing effect of the nicotine on rats when acetaldehyde, an increased component of the smoke --

MR. COFER: Objection leading.

THE COURT: It is leading, Mr. Gaylord.

MR. GAYLORD: I will rephrase.

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BY MR. GAYLORD:

Q. What can you tell us about Dr. DeNoble's discoveries, if any, about acetaldehyde and its relationship to the effect of nicotine on rats?

A. Dr. DeNoble was primarily studying the nicotine analogs that I mentioned that were being synthesized by Dr. Jeffery Seeman and his coworkers. And, in addition to that, he decided to study other chemicals that might interact with nicotine that were present in smoke in relatively high amounts. So acetaldehyde was one of the compounds that he selected for study, and he found that it had, in this rat test, a reinforcing effect on nicotine in rats.

Q. Were adjustments of the amounts of sugar for purposes of determining -- for purposes of having an effect on the impact of nicotine to smokers made in Philip Morris cigarettes?

A. I don't know.

Q. Were adjustments to the -- what you called cooked flavors made in the cigarette products that would affect the nicotine impact on smokers?

A. Yes.

Q. And the -- let me ask you this: If we

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could go to the manufacturing plant where they made Marlboros for Philip Morris and walk through the plant and look at the various vats and pipes and things that are used in manufacturing at Philip Morris, would we see steps in the process that included adding ammonia to the material that was going to go into the Marlboro?

A. Yes.

Q. And tanks labeled "ammonia" and pipes going into the other vats and pipes to do that?

A. You would see ammonia, urea, diammonium phosphate. You would see a lot different chemicals. Propylene glycol, glycerin. There are a lot of chemicals I've mentioned. The chemicals comprise about 20 percent of the weight of everything that is inside the rod, the tobacco part.

Q. I didn't ask you this earlier. In the process of manufacturing the cigarettes, is the nicotine just left alone, or is it in itself manipulated?

A. Nicotine comes in with the tobacco they buy. They buy the tobacco and then they analyze it before they put it in storage. I mentioned they take it out of storage sometimes over five

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years, three years to five years. So we know where all the nicotine is, and then depending on how much nicotine you want for a specific product, you can select between the various amounts.

One of the misconceptions, I think, is that manipulation involves adding extra nicotine. You don't need to do that at all. All you need to do is jiggle it from one place to the other to where you want.

So, for example, in the '70s, when I got there, Merit cigarette, they increased the amount of high alkaloid or high nicotine tobacco that was used in that specific product to change the nicotine/tar ratio. So even though you are not buying nicotine from a nicotine store and putting it into cigarettes, you are changing which products it is in and how much by how you manipulate your warehouses full of nicotine and tobacco products.

Q. Is the nicotine that results, the level or amount of nicotine that results in a Marlboro an accident?

A. No, nothing in those products is an accident. I mentioned that they blend over crop years. Approximately every quarter you have to

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1 change the blend formula. It is very carefully
2 engineered. Everything is very careful and
3 controlled.
4 To give you an example, when you run a
5 tar/nicotine test, the test prescribes that you go
6 out and take like certain number of cigarettes,
7 let's say 200, or packages. There is a protocol
8 for doing that. If you didn't regulate things
9 very carefully, what would happen is you would
10 have a very wide error in -- you smoke one
11 cigarette and have lots, and the next one would
12 have a little bit.
13 The industry, over the last 50 years, has
14 moved to being able to make a very, very
15 consistent product in both tar delivery and
16 nicotine delivery. In order to do that, you have
17 to manipulate and control the product almost
18 totally.
19 Q. If we told the jury that they essentially
20 take out the nicotine and put it back in measured
21 amounts, is that concept reasonably accurate?
22 A. In certain respects, if you talk about
23 this sheet-making process that I was talking
24 about. If you make it out of the paper sheet,
25 what you are doing is you put fiber down. Fiber

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doesn't have any nicotine in it, so you're taking it all out into the slurry, and then you're putting it back onto this paper that is going through the paper-making process. You have redistributed it more uniformly. It may have come out randomly out of 500 scrap barrels.

The barrels, by the way, are called hogsheads. When you put it all together in the sheet product, you can make a nice uniform homogeneous sheet. In a way, you have taken it from one place and put it in another.

Q. Back to this image of walking through the plant and seeing what the vats are and what's connected to what and so forth as they manufacture cigarettes.

You used the term "cooked flavors." Let me digress from that and get a better understanding of cooked flavors.

Cooked flavors is something in the category of nicotine analogs?

A. It is not in the category. When you cook -- it's cooking. When you cook sugar and protein together, simple amino acids, you make a classic compound called pyridines and pyrazines.

Q. Could you write those words down?

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A. (Witness complies.) Pyridine itself, this is a classic compound. If I take the "S" off, it is a very specific chemical compound. As early as 1895, it was recognized as giving some of the same effects as nicotine.

I actually have a pharmacological textbook from 1896 that was published on 1895 data that says at that time that they couldn't find any nicotine in the tobacco. Their analytical methods were so poor, they thought all the effect came from pyridine. Those are the analogs that Dr. Seeman and his coworkers made, and you make those by taking sugar and protein and cooking it together. These are also added. The pyridine compounds are added as flavorants by the industry.

Q. When you say those have nicotine effects, I want to be clear what you mean by "nicotine effects."

Are you talking about the same pharmacological or drug-like effects?

A. Similar -- yes. Not exactly the same, because they are analogs, but almost all of them have, if you looked at what we call a Material Safety Data Sheet, which tells you what the hazards are associated with different chemical

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compounds, you would find that almost all of them are central nervous system depressants. They depress your central nervous system. Some of them, like nicotine, may also have the peripheral effects, which are the ones we don't want.

So a general category of these things they have the drug-like effects and the primarily central nervous system depressants.

Q. And pyridines and pyrazines are both additives to the Philip Morris cigarettes?

A. Yes.

Q. And they are added as part of something called cooked flavors?

A. They can be added as part of cooked flavors, or they can be added simply as flavors. You can go out and buy pyridine or pyrazine compounds or derivatives, or you could buy from your flavor manufacturer so you are not buying directly flavors that have it in.

In fact, there are some flavors that we eat, like meat and some other things, that have similar kinds of flavors in them. But the difference, again, between eating it, it goes into your stomach, whereas it's protonated very heavily by your stomach acid. Whereas if you inhale it,

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you don't get that difference. There is a big difference between inhaling and eating it.

Q. With respect to their nicotine analog effects, do these compounds add to the effects of a given delivery of nicotine in the smoke?

A. The research work was intended -- showed that they have activity, and if you put them together, that would mean that you could get the same activity with a lesser amount of nicotine.

Q. And if a cigarette manufacturer was responding to pressures to identify how much tar and nicotine, for example, were in its cigarette products, would these pyridine and pyrazines show up as part of that measurement?

A. Yes, in my opinion -- well, I mean, there are papers written while I was there, people that reported to me with reports indicating that these compounds have properties like this, and at one point the analog -- nicotine analog program was changed so that the same compounds would be used in the flavor program so that there was a shift of using these compounds as nicotine analogs and incorporating them into flavors.

Q. Let me ask my question again to be sure I am clear with you.

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If a company was listing the nicotine contents of its cigarettes, would that measurement include the pyridine or pyrazines, or would they be outside of that?

A. No, they would be outside that measurement. As a matter of fact, it doesn't include the gas phase in it.

Q. If I walked through the plant where they make Marlboros and looked at the labels on the vats of materials that were going into the processed tobacco products to be part of the cigarette, would I see labels saying that we're putting nicotine analogs in there?

A. No.

Q. Would I see a label that included those nicotine analogs without mentioning them?

A. Not necessarily. Depends where you talk about.

This is complicated. You have got all this different blend components. When you walk through a cigarette manufacturing plant, generally what you see is the part of it where the tobacco is rolled up inside paper in these machines that make 8,000, 10,000 cigarettes per minute. You might see the place where they chop up the

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tobacco, turn it into what they call filler, where all these ingredients are blended together to go into the cigarette.

What you will not see is the place where they put the flavors together, and you won't see any of that. That's highly secret in any tobacco company, any cigarette company. All you will see is just have knowledge that it was sprayed onto the filler or it was added to the filler.

Q. If I looked at the labels on the various vats and pipes on the plant, would I see cooked flavors?

A. Yes.

Q. As you have described, it is the cooked flavors the place where pyridines and pyrazines might be going into the process?

A. That's one place. As I said, you can buy them and buy them in various kinds of flavor additives that you can put in, meat-type flavors, strawberry-type flavors, a bunch of flavors that contain these materials. But, again, I point out the difference between eating the material and inhaling it.

Q. Now, I want to go back to a subject that we may have introduced but we really haven't

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explored. That has to do with the reason that you were recruited and accepted the job at Philip Morris having to do with developing safer cigarette products, okay?

A. Okay.

Q. I would like you to talk to the jury about whether the projects that you worked on and that your people -- let me ask the question before that.

How many people worked under your supervision during your directorship of the applied research department?

A. It varied from about 40, 50, up to 200. I would say over the seven years it averaged out to be about 150.

Q. In addition to the work that was being done under your directorate, you were aware of Dr. Osdene's work and work underneath his directorate to take forward the ideas that you worked on in your directorate?

A. The work related to ours and some of the work that was done in other locations that wasn't -- it wasn't secret. It was projects going on that people who worked for me, for example, were part of that I was not allowed to know what

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those projects were.

Q. Were you and the people working under you and the people working in the other directorates that you were aware of able to successfully bring into the marketplace substantial improvements in the safety of Philip Morris cigarettes?

A. We don't know. The predominant evidence, the answer is no.

Q. Were you aware of programs that were undertaken and pursued but stopped short of completion by policies at Philip Morris?

A. Yes.

Q. Can you describe at least some examples of that phenomena?

A. Yes. One example is you mentioned earlier the negative effects of nitrate in tobacco. When I arrived at Philip Morris, there was two -- there was an ongoing method at the plant where they made this paper sheet. They could remove about 90 percent of the nitrate that was in the tobacco, because at that point you are taking the tobacco waste apart. You are making fiber, and you have what we call the soluble part.

So you could cool down the soluble part and you would proceed to take out little crystals

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of potassium nitrate which you could remove. So you could actually take out about 90 percent. Unfortunately, that's not enough. It still left you with enough nitrate that when you burned it, you would get these oxides and nitrogen and would make nitrosamine.

Q. Let me interrupt you to bring the jury back. What is a nitrosamine and what is the concern about a nitrosamine?

A. Nitrosamines is a compound that interacts between a -- it's a chemical compound made up from alkaloids, the nicotine-like compounds in tobacco and the oxides of nitrogen.

If you look at the chemical carcinogens that are in tobacco, that is probably the class that is considered to be the most dangerous, the most hazardous. What we mean by that, it will cause the worst effects in the smallest amounts. So we want to remove those.

There is two things you can do. One is you can remove them. Some occur naturally in tobacco. You take them out before the tobacco is used. The other thing you could do is prevent additional nitrosamines from forming by removing the nitrate. So we tried to remove the nitrate to

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prevent it from forming.

There were three processes developed. One was electrodialysis process, where you would put electrodes in and separate out the nitrates, and there were two biological processes. One called an anaerobic process and one that we were working on was -- one was an aerobic process being worked on in Switzerland.

We were working on an anaerobic process at R&D in Richmond. So we had these three proses and worked on them starting off from 1977 through about 1980. About '79 a patent was filed on the one of the anaerobic processes, and in 1980 a report was written which indicated that these projects are commercial licensable.

Specifically, the report indicated -- the independent report, not for people who are working on the project, but from a Philip Morris person who was commissioned to do this work. Her name was Susan Dobberstein, D-O-B-B-E-R-S-T-E-I-N. Susan had concluded that we had consumer tested the product, it was acceptable. And Dr. Osdene had indicated that based on testing that he had done, which I only saw the results of that sheet we made -- I didn't see it in the final product --

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but in the actual sheet, this paper-like material we made, there were no traces of nitrosamines, which was very good, which meant we at least eliminated the nitrosamine from that small segment of tobacco, which could amount to 10 or 20 percent. It was considered a major step forward.

So that project, to my knowledge, went through various iterations, and at the time I left, as of the time I left it had not been utilized. That's one such project.

We had another project. I mentioned that Burley tobacco contains more nitrates and more of the nitrosamines. You can make Bright tobacco taste like Burley tobacco if you cure it like Burley tobacco. In other words, I mentioned earlier Bright tobacco and something called flue curing. They cut it and put it in the barn and heat up the barn.

If you take the Bright tobacco, instead of putting it in the barn and you dry it out in the sun like Burley tobacco, we found that the chemistry is related to how you cure it. It is not necessarily intrinsic in the product. It is like the old story of whether children learn by genetically or because they are taught. In this

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particular case, you are teaching that -- the tobacco how to behave or taste like Burley tobacco due to the curing process.

Q. Was that a desirable thing?

A. Very desirable, because Bright has -- carcinogenicity and mutagenicity than Burley. This was a great advance. Philip Morris purchased some $2 million to $3 million worth of tobacco treated that way, tested it out. As far as I know, while I was there this was a very successful program, but it was never implemented on a large scale.

Q. The jury has heard testimony from Dr. Ian Uydess. That's a person you know?

A. I hired Dr. Uydess and he worked at my directorate, yes.

Q. Did he work on some of the projects you are describing in terms of improving reducing the carcinogens in the tobacco?

A. Dr. Uydess worked, among other things, on the -- what we call the naturally occurring denitrification process, that's the anaerobic process, after the 1980 timeframe. It was indicated that process cost too much, there was also some concerns about what might happen if you

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scale it up and so on. So he continued to work on that right up to the time I left.

Q. Was there -- did you become aware, as a manager and scientist at Philip Morris, of a policy level reticence to pursue the development of projects that would lead to safer cigarette products?

A. Well, that is a frustration that I think all of the scientists there have. For example, when we developed the laser perforation project, the laser perforation project saved just at one plant about $30 million a year. At two plants about $60 million a year. That was implemented in 9, 10, 11 months. It was a crash program put in. It was done.

The safety projects go on and on and on for decades. I refer to it as paralysis by analysis. Yes, it cost money, but the objective here is to make a safer product, and you are going to have to pay that money in order to be able to do it. We saw a very great reluctance to spend that money to implement the technology.

Q. Another example I'm going to ask you about, you mentioned that Dr. Victor DeNoble did work on a nicotine analog. You described it a

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little bit. I want to make sure I understand what that one was about.

A. There isn't a single analog there, it is a whole class of analogs. Dr. DeNoble did work to determine which of the many analogs of nicotine had activity in this rat studies that were the most similar to nicotine. Remember, we were looking for the central nervous system effects without the peripheral nervous system effect. We wouldn't want to be identical. That wouldn't be good.

It is like the difference between aspirin and ibuprofen. Ibuprofen has different aspects. It will relieve the headaches, but it doesn't have some of the side effects that aspirin does. What we wanted was one similar to that.

Dr. DeNoble, I think, evaluated dozens of these. He came up with one or two that were, let's call them his favorites. In his tests he thought they showed the best chance.

Q. Now, we're not involved in a case about cardiac disease, but was cardiac disease among the health concerns that were -- that the projects to make safer cigarettes were aimed at?

A. The analog program aimed very directly at

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that, the cardiovascular effects of increased heart rate and other problems associated with the use of nicotine.

Q. Did Dr. DeNoble and Dr. Seeman develop a nicotine analog that would substantially reduce or eliminate the impacts on heart disease, while providing the -- from the company's standpoint, the desirable effects of nicotine in the cigarette?

A. In my opinion, yes; in their opinion, I believe, yes.

Q. What became of that project?

A. Nothing, as far as I know, other than, as I said earlier, that some of the analogs I subsequently know were utilized in the flavor compounds, but not necessarily the same ones that Dr. DeNoble and Dr. Seeman interpreted as being the best ones to put in and replace nicotine.

Q. What happened to Dr. DeNoble's career with Philip Morris soon after he developed or felt that he had a successful nicotine analog for that purpose?

A. Dr. DeNoble's project was ended toward the end of 1983.

Q. He was terminated?

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A. Yes, he was.

Q. I want to change directions with respect to a subject that you have mentioned a couple of times, and you have said that there were secret or off-limit areas of research.

Let me ask you -- let me introduce the subject this way: You are familiar with the term "gentlemen's agreement" in the context of the tobacco business?

A. Yes, I am.

Q. Did you come to know that there was a -- by whatever name, a gentlemen's agreement between different members of the tobacco industry about what kinds of testing and development would and would not be undertaken by the companies?

A. Yes, I did.

Q. Was that something that you came to learn about because in your department's research work it sometimes frustrated your efforts?

A. Well, we -- in my opinion, this made sense. We supposedly were making safer products. In order to determine whether or not the products are safer, you have to test the product, the final product. You can't test some surrogate for the product.

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If you want to know, for example, whether Merit cigarette, which is a low tar cigarette, is safer than Marlboro cigarette, you have to test Merit versus Marlboro. And I couldn't find, while I was there, much evidence that was being done.

So my conversations with Dr. Osdene, Dr. Seligman, later Dr. Hausermann, who was my boss, Dr. Wakeham, Mr. Resnick centered around, well, this type of testing and how are we going to do this type of testing? And we were told -- I was told by all those people that we can't do that kind of testing, because we have agreed among the cigarette companies not to test animal tests products, and we agreed in the United States and we agreed to not final test the products.

I said, "How are we going to find out?" I was told that type of testing was being done in Europe primarily at a place called INBIFO, I-N-B-I-F-O, and that Dr. Osdene was coordinating that testing at INBIFO. I was told by my boss that either Dr. Seligman in the beginning, or later Dr. Hausermann, that the way I could find out about the results of that testing was by consulting with Dr. Osdene.

Q. Let me see if I understand the

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development of this part of your knowledge.

You came to work at Philip Morris and you were instructed to orient yourself to the business and learn what you could about how things were done?

A. Correct.

Q. And you did that. Did anybody give you at any point that document that either was called the gentlemen's agreement or contained the gentlemen's agreement?

A. No.

Q. Did you ever see a document that said, "We have got a deal and here is the gentlemen's agreement and we're not going to do certain things"?

A. While I was there?

Q. Yes.

A. Not while I was there.

Q. Over time did you develop an understanding that there were limits to what you and other researchers could do, based on an agreement between Philip Morris and the other manufacturers?

A. As I indicated, I was told that by Dr. Osdene, Dr. Seligman, Dr. Hausermann,

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Dr. Helmut Gaisch, Dr. Osdene's counterpart in Europe. Dr. Wakeham. Just numerous people, because as you worked at a place longer and longer, you developed more and more information, and that's -- I knew about it.

Q. Was this something you learned about by asking about particular tests that you thought should be done and finding out on more than one occasion that there was some reason you couldn't?

A. Let's choose a specific example. It is easier for me.

We made this denitrified RL sheet. The sheet alone, when you tested it, looked like it had no nitrosamine in it. The question is, how big an effect would that have if you used that sheet in the Marlboro cigarette? In order to know that, you would have to incorporate that into a Marlboro cigarette and test the current Marlboro cigarette versus that in biological tests, in vitro and in vivo biological tests, to determine whether or not it was safe.

That's what we were trying to get done, so we would know. The way that supposedly was going to work was that Dr. Osdene would take care of those kinds of testing and then we would be

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told of the final results.

Q. Now, you said you wanted to test that in a Marlboro cigarette. I'm going to surmise that if you put that in there you wouldn't call it a Marlboro at that point.

A. No. Changes are being made every three months. Changing the blend components we talked about. If you put that in there, you could still call it a Marlboro. But the thing is, you want to put it in a product that is being tested; Marlboro, current Marlboro versus modified Marlboro, and new Marlboro. You can still do that. But the main issue is to test the product, the final product that you are going to sell.

Q. Is there is a concept called whole product testing?

A. Concept in almost every consumer product I'm aware of.

Q. Has that concept in your career, excluding Philip Morris, been an essential step in determining whether there are any unforeseen harms to come from a product before it is put on a marketing --

MR. COFER: Objection, leading.

THE COURT: Overruled.

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THE WITNESS: Whole product testing, in my opinion, in every industry I have worked in outside of Philip Morris is a requirement. You want to test the product that you sell, particularly for a consumer product. It is a product the consumer uses or comes in contact with, and you need to anticipate all of the problems that you can anticipate for that problem and you need to study them.

BY MR. GAYLORD:

Q. From your experience at Lever Brothers, for example, had you ever encountered a situation where there were restrictions or limitations against performing tests on the final product before it was sold?

A. No. And I had a different position there where I could, in fact, help -- I was involved in determining which tests we wanted to do. That's usually a joint process of many people to determine what tests you do. It was open. Everybody knew what tests we were doing. They knew the rationale for those tests.

Those records were open for inspection by all of the scientific staff, by any pertinent agency that might want to come in and look at the

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records. It is usually an open-book kind of thing.

Q. Lever Brothers is a company that has competitors?

A. Yes.

Q. Did the fact that they were competitors in the field selling similar products prevent Lever Brothers from performing whole product testing?

A. No. Not only did we do it on their product but to make sure our product was no more hazardous and worked as well as the competitor's product.

Q. I want to get back to the gentlemen's agreement and understand what were the dimensions of the gentlemen's agreement as you understood it.

As you learned of it, did the gentlemen's agreement include a restriction on any finished or whole product testing by Philip Morris?

A. Yes. Their product and of the competitor's product. So, for example, at the time I was there, Carlton was the lowest tar product on the market, so one might assume that it might be safer. That was the hypothesis we would operate under.

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How do you know if it is really safer? So you would have to test it versus Marlboro versus Merit. We came out with Merit Ultra Lights to kind of compete with that. Was it better, equal, the same? Did the blend changes we made, did the manipulations we were doing, are they any better or, in fact, is the cancer-causing potential for a low-delivery cigarette the same as a Philip Morris unfiltered?

Q. If it is possible for you to list the pieces of the gentlemen's agreement, I'm going to ask you to do that. And we have got one of them identified so far. No whole product testing.

A. Let's call it finished product testing. Basically, this is no -- no competitive product testing.

Q. So you couldn't test a completed Marlboro, but you also couldn't test a completed Winston?

A. That's correct.

Q. Go ahead.

A. No animal testing in the U.S.

Q. Okay. I will ask you some more about that. Is that the list?

A. Yes.

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Q. What about testing for cancer-causing potential? Carcinogenicity?

A. Outside of these compounds, lots of testing was done for mutagenicity at Philip Morris in cells. We had like -- I don't know if people are familiar with -- that's the microbial level tests that we use for mutagenicity --

THE COURT REPORTER : Can you repeat that.

THE WITNESS: There was hamster cell testing. There was a bunch of cell level testing, but we would not use finished product in that smoke from finished products.

We would test Burley versus Bright versus expanded tobacco, so you would test parts of the formulation. From that, you would try to infer whether you were headed in the right direction.

I don't want to give the impression we are not testing. We are doing a lot of testing. The problem is, if I -- the example I used. If I made an RL sheet, and that test that shows that it is fantastic, it doesn't cause the mutagenicity, now how do I move from there to find what it does in any product I use it in? I have to test it in the final product in the same

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or different tests, and I have to compare it against different products.

BY MR. GAYLORD:

Q. Was it your understanding that the other cigarette manufacturing companies in the United States had made an agreement that they would not do the same kind of testing that Philip Morris would not do?

A. That was my understanding.

Q. Did you learn at any point why this restriction on testing had been implemented? In other words, what motivated Philip Morris and its competitors to agree not to do these kinds of tests?

A. Two explanations were normally given. One is a competitive war based on safety. As I understood it from my superiors, that there was a very great reluctance to enter into a competitive war based on safe cigarettes. The second part of it was -- had to do with potential litigation to not have a paper trail that would look bad should there be potential litigation.

Q. I'm going to ask you to look at Plaintiff's Exhibit 73. This is a document from 1969, I believe. It is a Philip Morris document

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and the name H. Wakeham is at the top, along with Mr. Millhiser.

A. Yes.

Q. Who is Mr. Millhiser?

A. Mr. Millhiser was a senior executive in Philip Morris and then Philip Morris U.S.A. At the time I was there, he was one of the co-chairman or vice chairman.

Q. And you know Dr. Helmut Wakeham?

A. I know both of them.

Q. Dr. Wakeham at this time in 1969 was vice president of research and development?

A. Yes.

Q. It might have been a slightly different title, but vice president in the scientific end of things.

And in the highlighted passage the document says, "Unfortunately, too, the scientific expertise of the industry, because of the liability suit situation, has not been permitted to make a contribution to the problem. The contribution, which I believe was and is vital because the industry scientists are willing to consider the scientific problem from the point of view of the industry rather than from a position

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of the public health agencies."

Is that quoted passage relevant to what you have been telling us about the gentlemen's agreement?

A. That's consistent with it.

Q. Is the suggestion that it has to do with the legal problem consistent with your understanding of the gentlemen's agreement?

A. Consistent with my understanding of why there was such an agreement and why Philip Morris was not willing to do this type of testing.

Q. During your career at Philip Morris did the company or any of its representatives, to your knowledge, ever acknowledge publicly that there was a health problem associated with cancer in cigarettes?

A. I don't think they did. We lived in -- we worked in a relatively small environment in Richmond, Virginia. I didn't follow all of the releases of the various agencies representing the tobacco industry, but I'm not aware of any such admission.

Q. Did you gain an understanding during your work there that one of the reasons not to be doing the kinds of testing that you have described as

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restricted was that there not be documents produced that discussed the question of cancer in cigarettes?

A. The desire not to have documents admitting that cancer was caused by cigarettes was expressed many times.

Q. Now, you described -- you mentioned getting some test work and -- I don't know if you still need to stand over there. I don't have anything to show on the TV right this minute.

You described getting an understanding that there was some testing done in Europe.

A. Yes.

Q. Tell the jury what that was like in terms of how you and your people could get, if you could get access to any testing work done in Europe.

A. Well, we would provide the product modification either in the form of prototype cigarettes or suggestions for how to change an existing cigarette. Sometimes those products would be made in the United States by Dr. Gannon's group or later Mr. Tortrino's group. This is the development people that actually made the product.

So we would suggest how they make them. They would take those products. We would take

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them to Dr. Osdene or one of Dr. Osdene's associates, Dr. Robert Carpenter, Jim Charles, Bill Coon, who worked for him and later worked for me. Dr. Robert Pages. There was a series of people working for Dr. Osdene to whom we could take the concept or product, who would then be responsible for seeing that the proper testing was done, either if it was in vitro testing, that would be done in Richmond, or send it overseas for the animal testing.

And the information, when it came back, would come back to Dr. Osdene. And then what I was supposed to do was to talk with Dr. Osdene about the results of those tests.

Q. How did you work your standpoint as a scientist; was that a satisfactory way of receiving data and test results?

A. It is not ideal, not satisfactory, really, but the issue becomes at some point whether you are going to try to work within the system. I must say that over the time period that I was there, there was always an indication given to me that the system was going to change, that it was going to become more open, it was going to become better.

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There was an acknowledgement by my boss. A lot of times in order to see a result I would have to go to Dr. Seligman, who would then force Dr. Osdene to show me the result. Not always. Sometimes Dr. Osdene would talk about the results.

Q. Did you have an understanding about whether or not there was any paper trail of test data or test results allowed to flow back and forth across the Atlantic Ocean?

A. Yes, I did. Remember, we are going to distinguish between two types of testing. One is the animal, or in vivo testing, because the in vitro testing done in Richmond, it was much easier to get access to that data. There were reports written, we could go to meetings, and hear the results. We have to be careful here.

The in vitro testing, the lower level, your first cut at whether it is working or not, still no finished product, still no competitive products, but at least the general concept, like the things that I mentioned before that we had access to.

The animal testing data was the part where there was not supposed to be any paper trail, and Dr. Osdene indicated to me that he

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could not even allow those documents to be on premises.

Q. Was Dr. Osdene sort of the conduit for information from European testing?

A. Yes. He was -- that was part of his job responsibility, to interface with the European testing.

There was also testing to be done in the United States that I thought at the time was being done under CTR, or other -- there were studies being done in the United States also. But our product testing, the one that was supposedly testing our whole products and testing them against competitive products, was being done in Europe.

Q. Dr. Osdene is a familiar name. Is he the one, correct me if my memory -- is he the one who was also involved in maintaining controversy?

A. Yes. Dr. Osdene -- on several occasions we had long discussions, many occasions about part of his job description was to be involved in the smoking and health controversy.

Q. Did you ever get to see written document results, papers with writing on them that showed test results from Europe?

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A. Twice did I remember, yes.
Q. How did that happen, or tell us about what happened?
A. One of them is the nitrosamines in our product.
Q. That's the main carcinogen?
A. Yes. The tab specific nitrosamines testing was done on product and some of that was done in Europe. Dr. Osdene showed me the results in the presence of, I recall, Dr. Charles and Mr. Carpenter. And then he indicated, "Well, I wasn't even supposed to show you that. I have to destroy it. Please give it back to me," which I gave it back to him.
I didn't see him destroy it, but he said he wasn't even supposed to have that there.
Q. Okay. Did you have an understanding of why he was not supposed to have that there?
A. Well, yes. He told me that none of the data generated in Europe under the egis of INBIFO or even Philip Morris Europe back to INBIFO was supposed to be on premises in case there was litigation, that those documents would not be discovered.
Q. Was it your impression that the

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restriction on documents from Europe had to do with not having those documents be available to people that made claims against with the tobacco company in the United States?

A. The type of litigation -- whether it was that type or regulatory, or whatever, it was just a general sort of philosophy.

Q. Okay. Let's go back for a moment to Lever Brothers. When you worked at Lever Brothers, did Lever Brothers have branches and reach overseas in terms of its subsidiaries and partners?

A. Well, it is the other way around. Lever Brothers was a totally-owned subsidiary of UniLever. The parent company was overseas.

Q. Was there ever any limitation on the documentation of testing at Lever Brothers that you were aware of?

A. No.

Q. Was there any restriction of whether documents could be shown to other scientists in other branches of the company at Lever Brothers?

A. No. Not any safety testing. Generally speaking, we would test those within the company like we had our laboratory do its own

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carcinogenicity testing, like three-year animal feeding, and then we would duplicate that outside the company, and it might be duplicated in Europe so you could compare the results. But the only way that information seemed to make sense is to have it be sort of peer reviewed and open so that they would have less question about the validity of the results.

Q. As a scientist, is it important to see the underlying data before you decide what to do with the results of a given test?

A. Well, I don't know that I have to see it particularly myself. It is important that it be available and it is important that it be peer reviewed, that it isn't just one person's result. Generally speaking, it is important that it be validated, if it is a very critical test.

So, for example, there is nothing wrong having testing done in Europe. Okay. If we were doing testing and they are doing testing and you want to compare the results to make sure they agree. Intrinsically, there is nothing wrong with that. What bothered me was the fact that I never saw the results of any of these changes in final products either done in Europe or the U.S.A. or in

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our own laboratories.

Q. I want to be sure about a couple of points about this testing restriction. You described in vitro testing. That's not whole animals, that's not providing or exposing animals alive to products?

A. Correct. That's normally at the cell level. Sometimes you use collections of cells. It isn't necessarily a single cell, but it could be a collection of cells, like you can do an irritation study on frog skin, for example. But it is basically not a living, whole animal. It is done in test tubes or petri dishes.

Q. You did do testing with cigarettes and cigarette smoke on cells or tissue?

A. Lots of it, yeah, all kinds of testing done on cigarettes and cigarette smoke, generally speaking, things like comparing Burley versus Bright.

For example, I mentioned the trick of curing the Bright differently to make it taste like Burley. So that testing was done. They would take that Bright tobacco and compare it against Burley and Bright, specifically those components, and again it showed a tremendous

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improvement, reduction in mutagenicity and carcinogenicity.

The next point is, okay, we got that far, now what happens when you put it in the product?

Q. When your research colleagues did testing using cigarettes, what cigarettes did they use?

A. Those cigarettes were made up of blend components, like I just indicated. For example, in the Bright versus Burley thing, they would test an all Bright cigarette versus an all Burley cigarette without the additives, without the other parts of the blend, so they were prototypes, knock-ups. They also always used a reference cigarette that supposedly stays the same from time to time.

Q. These were experimental cigarettes?

A. These were experimental cigarettes and not cigarettes as the one that you are selling.

Q. So the thing you couldn't do, you couldn't test a whole finished product cigarette on a whole animal?

A. Or even a whole product cigarette in an in vitro test --

Q. I will remind the jury of a quote from Exhibit 75. I will read it to you, Doctor, from

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Joseph Cullman, III.

Who was Joseph Cullman, III?

A. When I was there, he was the chairman of Philip Morris Incorporated.

Q. He wrote to Dr. Wakeham on February 24, 1970 regarding offshore research, "The possibility of getting answers to certain problems on a contractual basis in Europe appeals to me and I feel presents an opportunity that is relatively lacking in risk and unattractive repercussions in this country."

Is that a document that you are familiar with?

A. Yes.

Q. Is that a document that describes at least some of the motivations behind the restrictions on research in this country that you have been talking about?

A. Yes.

Q. A separate document, the next numbered exhibit. Plaintiff's Exhibit 76 is Dr. Wakeham writing to Vice President Goldsmith at the time when they bought INBIFO. You used the word "INBIFO." You are familiar with that as a facility that Philip Morris purchased in Germany?

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A. At the time I was with Philip Morris I didn't realize they purchased it until late in my career there, but, yes, they purchased it.

Q. In other words, you didn't always know that it was owned by Philip Morris, but you came to know that?

A. Yes. When I was at Lever Brothers I was aware of it as being an independent testing laboratory, and when I first joined Philip Morris Dr. Osdene and Dr. Gaisch and some other people led me to believe still it was an independent laboratory. But I think it was 1983 or so, somewhere before I left I became aware that it was owned.

Q. Dr. Wakeham wrote recommending buying INBIFO, quote, since this is a locale where we might do some of the things that we are reluctant to do in this country, close quote.

Is that your understanding how INBIFO was being used by Philip Morris in your career?

A. Yes.

Q. Dr. Seligman was one of your immediate superiors at Philip Morris?

A. Yes, for the first part of my career there.

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Q. He was replaced by Dr. Hausermann in that same position?

A. That's correct.

Q. Dr. Seligman. Plaintiff's Exhibit 97 also in evidence and seen by the jury, and I will quote quickly. Dr. Seligman wrote to Dr. Hausermann -- this is March 31, 1977 -- noting that Philip Morris has, quote, gone to great pains to eliminate any written contact within INBIFO, and I would like to maintain this structure, close quote.

They were sending samples to Neuchatel?

A. Neuchatel is where the Philip Morris Europe R&D lab was. Dr. Hausermann at that time was the vice president of research and development of Philip Morris Europe at the laboratory in Switzerland.

Q. He wrote that -- Dr. Seligman wrote they were shipping stuff to Neuchatel to, quote, transmit to INBIFO. If this procedure is unacceptable to you, maybe we should consider a dummy mailing address in Cologne. The written analytical data will still have to be routed through FTR, which is in Neuchatel, if we are to avoid direct contact with INBIFO and Philip Morris

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U.S.A., close quote.

Are you aware of that 1977 document?

A. Yes, I reported to Dr. Seligman at that time, and that's part of the genesis of my knowledge of the entire subject.

Q. And this would make it sound like -- and I will ask you, was the restriction on dealing with Europe research for Philip Morris such that you couldn't even directly mail things back and forth?

A. Well, that says -- I didn't -- I never had the opportunity to go there or send them anything directly. Mine always went to Dr. Osdene and one of his colleagues, and they would take care how it got there.

I don't know -- they made visits there. I know that. I talked to them about it. I don't know whether they carried samples at the time they made the visit or how that was done.

Q. Is the experience that you had with Philip Morris, including the gentlemen's agreement and the restriction on research, and including the reticence to bring forward scientific developments, aimed at making cigarettes a safer product consistent with published statements by

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Philip Morris in the industry that said, "We accept an interest in people's health as a basic responsibility paramount to every other consideration in our business"?

A. No, it is not.

MR. GAYLORD: I want to ask Ray to put on Plaintiff's Exhibit 108 on the viewer.

BY MR. GAYLORD:

Q. You are welcome to come down here. I don't know if you can see it from there, Doctor.

This is a letter from Dr. Seligman to Dr. Spears, who was apparently research director at Lorillard.

A. I know them both, yes.

Q. Is this dated March 31, 1980?

A. Yes.

Q. On the first page, which is the cover letter, there is a highlighting which shows a statement, "I have added a list of three subjects which I feel should be avoided." The context is referring to test subjects for scientific research.

A. If I recall correctly, this has to do with research that CTR should do, or one of the groups, tobacco groups.

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Q. Perhaps. I'm just reading a section of it. Let me look at the whole letter.

Yes, it is recommendations for industry research which they prepared last year. "To that end, you will find attached a list entitled Potential Long-term Scientific Studies which Dr. Osdene and I generated early last year."

Then there is an enclosure that has a long list of subjects, and then there is a second page which is the one referred to in the last sentence that we read and it is three items to be avoided for research. It says, "Developing new tests for carcinogenicity is Item 1. Attempts to relate human disease to smoking for Item 2."

A. Yes. The third one is also significant.

Q. I can't read it from here.

A. It says, "Conduct experiments which require large doses of carcinogen to show as additive effect of smoking."

Q. Under the circumstances -- let me depart for a moment on that subject.

Item 3 on there that I did not highlight, is smoking, as you understand the process, a behavior that results in large exposure to any carcinogens that happen to be in smoke because of

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the frequency of the use of the product?
A. There are large doses already there. What I believe this refers to, if I remember conversations of the time had to do -- talk with Dr. Osdene about testing being done in Europe with regard to the effects of some of the additives that were being used.
Q. In your experience in consumer product testing before Philip Morris, was it important to consider the way a product is used and the frequency and amount of exposure that it would generate?
A. Yes.
Q. And should testing be designed to take into account the extremes of exposure in order to adequately address the question of risks from the product?
A. Well, yeah. It also -- not only the extremes of exposure, but what this relates to is if they wanted to show that -- by "they" I mean the industry, Philip Morris directly, that an additive was okay, what you do is you take a highly carcinogenic reference cigarette. You test that. You add a little bit additive to that and you test that. You show there is no difference

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between the reference cigarette and the reference cigarette plus a small amount of the additive. You say, "See, the additive didn't make this any worse."

And that was a particular kind of additive testing to which I objected to at the time, because I felt it was playing tricks with the test system.

Q. With respect to this statement of three subjects to be avoided in testing by the industry testing process in the CTR, I hadn't thought of this before, but I will ask, does this appear to represent perhaps a documentation of at least one manifestation of the gentlemen's agreement?

A. Well, they are all -- yes, this is consistent with the gentlemen's agreement.

Q. Is this limitation on testing by the industry consistent with the practices of an industry that is concerned about the health effects of its product?

A. No.

Q. Is this representative of an industry that holds people's health as a basic responsibility paramount to every other consideration in their business?

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A. Unfortunately, no.

THE COURT: Mr. Gaylord, would a two-minute stretch break for the jury be helpful at this point?

MR. GAYLORD: That would be fine.

THE COURT: Stretch.

(Pause)

THE COURT: All right. Jurors, the last 30-minute push. I appreciate your continued attention.

Mr. Gaylord.

MR. GAYLORD: Thank you, Your Honor.

I may ask Ray to put Exhibit 112, Plaintiff's Exhibit 112 on the viewer. For the moment we need to look at the screen.

BY MR. GAYLORD:

Q. Dr. Farone, this is a document that I need to look at entitled, Accomplishments, 1980 Research. Do you see that title?

A. Yes, I do.

Q. It is Dr. Osdene's document. It says "confidential" and says "distribution" on the bottom of the page. Do you see your name there?

A. Yes.

Q. And several others. I believe some

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others that we have been talking about.

Is this a style of document that you are familiar with?

A. It is an annual report. A composite report was made each year about the accomplishments about the research and development department, and each of the directors prepared a summary of the accomplishments of their director.

Q. I'm going to ask to show a page Bates number 84 of that document. I'm not sure what page it is into the whole document. I believe the author of this is either Mr. or Dr. Kuhn.

A. Mr. William F. Kuhn.

Q. Do you know who he was?

A. Yeah. At that time he worked for Dr. Osdene. Later, he worked for me.

Q. At the time was he the head of the biochemical research division?

A. Yes.

Q. Which was under Dr. Osdene's directorate?

A. That's correct.

Q. This is his annual 1980 report for the accomplishments for his part of the research work?

A. Yes.

Q. Or his people's part, I assume.

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And he says in the highlighted portion there, "The major thrust of the division is directed towards defensive research."

A. Yes.

Q. Do you know what that means?

A. Yes. Generally, we talked about defensive research and offensive research, if you will.

Offensive research had to do with making new products, improvements in products, things which were moving the products forward. Defensive research had to do with protecting the company from attack, either by other companies or by the threat of litigation, or whatever was going to attack the company. It is defensive versus offensive.

MR. GAYLORD: Show Exhibit 127, please.

BY MR. GAYLORD:

Q. I'm showing you Plaintiff's Exhibit 127, Doctor. This is a July 27, 1983 document. The cover letter is dated July 27, 1983. The document is entitled Confidential Attorney Work Product, For Use of Counsel Only. And the conclusion passage says, "Research engaged in" -- I want to give you a little more context. "Research engaged

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in as well as something possibly under consideration by Philip Morris as undesirable and dangerous implications for litigations positions the industry takes in regard to smoking behavior. The pharmacological nature of the research implies strongly a view of the importance of nicotine. What is worse, research reports under Philip Morris' sponsorship contain claims of physiological tolerance to nicotine, as well as claims of unequivocal demonstrations of reinforcement of nicotine in animals. This kind of research is a major tool of our adversaries on the addiction issue; the irony is industry-sponsored research is honing that tool. In the final analysis, the performing and publishing of nicotine-related research seems ill-advised from a litigation point of view."

I represent to you that this is from a lawyer. Are you familiar with this document?

A. I'm familiar with that paragraph.

Q. Are you familiar with the research that he talked about there where it says, "Reports under Philip Morris sponsorship contains claims with regard to physiological tolerance to nicotine"?

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A. My understanding of this, when I became familiar with it, was in reference to Dr. DeNoble's research on the rats that we talked about earlier. And this coincides with the shutdown of his project and the termination of Dr. DeNoble.

Q. All right. In the course of doing his work to discover a nicotine analog that would maintain the nicotine effects on the brain and not have the damaging effects on the heart, Dr. DeNoble was doing tests with animals that demonstrated physiological tolerance to nicotine?

A. Yes.

Q. And as one of the directors in the research department and an acquaintance of Dr. DeNoble's and a person knowledgeable about what happened to his work, it is an understanding of yours that this characterization by lawyers played a part in the end of Dr. DeNoble's project and his termination from the company?

A. Dr. Hausermann and the directors had a meeting where this was discussed, the reasons for termination of the project and what kind of projects would be acceptable and what kinds weren't, and this was discussed at the meeting.

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Q. When you worked at Lever Brothers, did you ever come across a situation where the company lawyers had say over what research was done and not done at the company?

A. Not that I can recall. About the closest we came to that is we had an emergency response team suggested by the lawyers to go out and talk to people -- normally contain a physician and a scientist, concerning if someone misused the product or had a problem, then rather than let that turn into litigation, the lawyer suggested that we develop an emergency response team to go out and talk to the people's physician and the family about the accident they might have had.

For example, if a child inadvertently drank a bottle of dish-washing detergent, rather than let that mushroom, you sent people out to discuss it with them. We did have inputs as to how we should do things, but not about the research we should conduct.

Q. Sure. And Lever Brothers has lawyers and deals with lawyers and receives legal advice from lawyers on a regular basis, from your experience?

A. Yes.

Q. But did the legal advice provided to

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Lever Brothers ever cross over into the area of decision-making on whether or not to undertake health-related testing of the products?

A. No, they had no role in that.

Q. In your experience and from your judgment and in your opinion, does the conduct of a reasonable manufacturer of consumer products -- is it consistent with the conduct of a reasonable manufacturer of consumer products to have the research decisions dictated by the lawyers?

A. Not in my opinion, not in my experience.

Q. Is that outcome of the research work being done by Dr. DeNoble and that position enforced against his work by the advice of lawyers consistent with the conduct of a company that "accepts an interest in people's health as a basic responsibility paramount to every other consideration in our business"?

A. No, it is not.

Q. In your opinion, was there any reason why Philip Morris could not have pursued technologies developed during your stay at the company to products that would substantially improve the health results to smokers of Marlboro cigarettes?

A. Well, in answering that question, we have

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to recognize that a lot of changes were made that the people working on those changes believed could reduce the health consequences. The real problem was that the evidence as to whether or not they did was not provided, and therefore you really didn't know whether the changes you were making, that you thought may have helped, actually helped.

Q. Is it essential in the manufacture and production of safe consumer products to be able to determine the safety results of changes you make and experiments in the products?

A. It is especially, when you know, number one, you have a product. Number two, you have a confirmed -- that is, no one has found an exception to the hypothesis about how the problem works.

What we're talking about here is removing nitrosamines and carcinogens. We know what is causing it. It seems very natural.

I would point out in recent history in this industry it is starting to happen. At the time I was there, it was just a continuing fight to find out what your changes were doing.

Q. With respect to the tobacco-specific nitrosamines that you described, is that a fair

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statement, that tobacco-specific nitrosamines are kind of the big, bad guys in terms of carcinogens and tobacco smoke?

A. The nitrosamines are from all accounts, published literature -- it is difficult to put percentages on how many cancer cases would be removed by only removing part of the carcinogens, because you really don't know the total sum of what is left, but the clear indications are reduction of that part would have a significant effect on reducing the number of cancers caused by smoking each year. By significance, that's going to be more than 5 percent, more than 10 percent. It could be as much as 50 percent.

Q. You mentioned earlier that the nitrosamines were reduced something like 90 percent in production cigarettes. Am I misremembering?

A. You missed -- the nitrates were reduced by 90 percent only in the RL. That's not the overall blend, the overall product. That was not enough to reduce the nitrosamines significantly in the finished product. So that change was a step forward, a good thing to do, but it didn't result in any significant reductions in nitrosamines.

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Q. Okay. That's because there was still enough nitrates there to produce in the resulting smoke almost as much nitrosamine as there had been?

A. Not only because there is that 10 percent from the RL that contributes quite a bit, but there are the nitrates that are in Burley. So you have to make other changes, additional changes to get the percentage of nitrosamines down to zero, which can be done and which has been done.

Q. You say "has been done." Do you mean that the cigarettes that we buy from Philip Morris now are improved by that change?

A. No, no, what I mean is the technology to do that is known to the industry and has been used to produce cigarette products, but not ones that you buy right now.

Q. This 90 percent nitrates, I had nitrosamines before. Let me go at it this way: If I'm understanding what you told us, it is the nitrates that are there in the tobacco products in the first place that have been reduced by 90 percent?

A. Only in the RL sheet. Only in one part of the tobacco blend.

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Q. Which is only one of the components of the diagram that you drew and not the majority component?

A. Correct.

Q. You used an analogy earlier to a hundred thousand bullets. Does that analogy fit and describe the problem or the difference between reducing some and reducing all of the nitrates?

A. Yes. In the RL part, maybe we reduced a hundred thousand to maybe ten thousand. But then that's combined with other materials which might raise it back up to 20,000 or 30,000. Whether the cell or the person in that case is far enough away for none of these bullets to hit them with repeated firings is not the case. They are going to get hit sooner or later. It is a question of how many times the shots are fired.

Q. Now, I want to ask you a couple of questions about your ability to answer a couple of questions. So this is foundational questions, I guess you would call them.

You have worked in the manufacturing industry for how many years now?

A. A long time. Say from '65 until now. That's 35 years.

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Q. And in that part of your career, you have had charge of the research departments for some very major -- some of the research departments for some very major companies in consumer product manufacturing?

A. That's correct.

Q. And in those stops along your career, you have had scientific responsibilities, management responsibilities, you have been a participant in policy level decision-making by those companies with respect to those products?

A. That's correct.

Q. You have had positions, particularly Lever Brothers where you were -- where the buck stopped in terms of approving products for sale?

A. The way I understood it, if something went wrong, I went to jail, yes.

Q. So you are well qualified to address questions about what does it take to make a reasonably safe consumer product and to have a reasonably safe corporate conduct in doing that?

A. I think so.

Q. Are you familiar with, under various different expressions, a thing that might be referred to as the general rule of product safety

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for manufacturers?
A. Yes.
Q. And I'm going to -- I'm not going to take the time to write it out right now. I'm going to try to say it from my notes and from what I understand you have to say about it.
Is there a general rule of product safety that has been provided in the speeches and documents shared by major manufacturing corporations in America since the 1960s?
A. Yes.
Q. Is it something that is one of the ways of saying which you believe to be the standard of reasonable care for the manufacturer of a reasonably safe consumer product?
A. Yes.
Q. And if I stumble when I try to say it, foul up, you will catch me. Let me see if I can recite the rule and ask you if it is the one you are referring to.
Is the general rule of product safety, the proposition is any risk of serious injury or death is always unreasonable and always unacceptable if technically feasible and economically feasible alternative designs would

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reduce or eliminate the risk?

A. I have heard it in slightly different words. I was a member -- I was the representative of Lever Brothers to the Industrial Research Institute, and the last part of that was usually, if there was available ways of ameliorating that risk and preventing it from happening.

Q. Okay. Would you agree that when we talk about available ways of ameliorating it, we need to look at both what is technologically available and what's economically feasible?

A. Well, that was part of the problem. There comes a point where economically feasible doesn't enter into the picture anymore.

Yes, in general that's what you're trying to do. But if you have a product that somehow -- it isn't economically feasible, but you know the risk is clear, then you have to figure out how to change that product totally so you can make it economically feasible. The fact that you can't afford it doesn't relieve you of the ability -- you can't put an unsafe product on the market because you can't afford a safe one.

Q. Do you have an opinion to a reasonable scientific and business probability, based upon

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your expertise, whether the Philip Morris Company complied with that standard of reasonable care in its manufacture and marketing of Marlboro cigarettes over the last decades?

A. Well, it is my opinion that affordable technology existed and exists to make the Marlboro product much safer. Possibly you cannot eliminate all causes of cancer or all causes of emphysema or all causes of even sore throats, but you certainly can reduce the number by a tremendous amount. Since particular knowledge wasn't implemented to do that, we really don't know how large that amount is, but it is known that it could have been done, in my opinion.

Q. How did you end your career at Philip Morris?

A. I was terminated.

Q. Tell the jury the story of your termination.

A. If I could use the chart, it might help. At the end of 1983 --

THE COURT: You are not on the screen.

THE WITNESS: At the end of 1983, toward the end, the president of Philip Morris U.S.A. was a fellow named Shep Pollack. He is the

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president. There is a senior vice president whose name is Wally -- William Wallace, Wally McDowell.

There is the vice president of R&D, my boss, Max Hausermann. Underneath here is myself. This gentleman, Mr. McDowell, orders my boss, Dr. Max Hausermann, to make an announcement in the research and development area that I'm going to be promoted to his job. That is, I'm going to become vice president of research and development in six months. And, of course, I perceive that as being an opportunity to finally get involved in more senior -- maybe I get to see some of the data I have been talking about today and maybe I would get a chance to make the system more open. And it seemed like finally we were making progress.

But I was really concerned about him making an announcement before it happened. I asked Dr. Hausermann not to do it until the act was actually going to be accomplished. But he said no, he was ordered to do it and, in fact, he did. He called the other directors and he informed all my colleagues at the director level that I would take his job in six months.

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Within a few days after that, this gentleman is gone, like less than a day, from the New York headquarters and he is replaced by that fellow named James Remmington. This fellow is the same, that fellow is the same, and I'm still the same. Immediately I go into my boss, Max, "Things have changed. Do you want to revoke this thing and maybe we shut down any rumors about my taking over?"

We had a meeting. Mr. Remmington came down from New York and sat with all the directors and said, "Nothing has changed. Everything is going to be the same, the way it was."

It turns out that during this period of time, my wife, who also worked for Philip Morris, was also told that she was going to receive a promotion. She was the assistant manager of the Green Leaf Stemmery where they treated tobacco and broke it up to the stem and lamina that I talked about before.

What happened next is this fellow disappears and now we have another change.

BY MR. GAYLORD:

Q. You don't mean he is missing in action?

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A. He is gone. He has left the company. Both of these things happened in one day. He is gone.

Frank Resnick, who was formerly in the R&D department, takes over. Mr. Remmington is still there, and Dr. Hausermann is still there and I'm still there. And then what happens is my wife is told that she is not going to get her promotion.

My wife had worked there for 19 years, she had obligated to buy a house. She was told she wasn't going to get her promotion. She filed a complaint with the Equal Opportunity Employment Commission on the basis of age and sex discrimination. That happens about here.

Then what happens is Mr. Remmington comes to Richmond, has another meeting with me and says, you know, "Your promotion is off, gone." So I said, "Well, you want me to leave the company?

"No, but your promotion is off."

So subsequent to that, he also told me that he probably wasn't going to be in his job very long, that he was going to be replaced very shortly. He was worried about it. So there is obviously management changes going on.

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My wife has filed an EEOC complaint. I asked my boss, Dr. Hausermann, what I should do. Dr. Hausermann said, "I can't give you any advice. You need to consult with your own private attorney about what you want to do."

Well, I'm not going to leave or quit, I will get some advice. I did that, and about the middle -- I'm going to come over here a bit. This is like November, December, 1983. Here we are in June of '84, I did what he suggested. He was leaving on vacation. I sent him a note saying, "Okay, I hired an attorney in case I have to make a complaint but, you know, if we want to talk about my leaving and the rest of it, I will do that. I will wait until you come back to decide whether I stay or leave."

He was -- he went on vacation on July 6th. I was called into the office of Mr. Barry Case and I was told that I was terminated for insubordination because I had consulted with an attorney.

Q. Who was this person?

A. Mr. Case was the head of the personnel department. Human resources, or whatever.

Q. You were told you were fired for

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insubordination?

A. Because I consulted with an attorney.

I told him he made a mistake, I did that under advice, but he didn't seem to understand that Dr. Hausermann was the one who told me. I said, "That's a mistake." I said, "Okay, the die is cast." I actually used the Latin phrase talking to Max. The Latin phrase is "de jalia jaecta est." I said, "Okay. I will go."

Max asked me if I was shocked. "If you want me to go, just tell me." Virginia is an at-will work state. I have no contract with the company. If they didn't want me to be around, all they had to do is say, "Go away."

Q. Max is Dr. Hausermann, your immediate supervisor?

A. Right.

Q. Let me stop for just a second.

When you were told you were going to replace Dr. Hausermann, that was not an adversarial thing between you and he?

A. No, we were great friends. I had high respect.

Q. He was moving out of the position?

A. He was there temporarily. He came from

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Switzerland, he was moving out. So against all the rules of the company, I committed one final act of insubordination. I agreed with Dr. Hausermann we would go back to the R&D lab. He could confine all 400 people, all 500 people, all we could cram in the auditorium. I would stay in the back of the room while he announced -- how he told those people about the resignation. He was trying to make a smooth transition.

I told him that I would be happy to let everybody know that everything should be okay, it would be an orderly transition, and because I was sitting in the back of the room I think that went extremely well. I don't think there was a whole lot of problems with that.

So I considered the whole thing very strange. It was a very difficult time in my life. If I had been told like two months earlier, "You can look for a job," no problem. But that's the genesis of the story. I don't know anything more about it than that. That's it.

Q. Did you leave Philip Morris in disgruntlement and anger?

A. No. I'm still quite proud of the work we did there. I think the people who worked for me

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worked hard. They worked well. I think that the mission of trying to reduce the impact of this product was a good thing to do. Some people say, "Well, you shouldn't be involved at all." But let's be realistic. This is a product that people can enjoy. They are going to use it. So I don't have any qualms about going there. I don't have any qualms about the work we did.

Q. Now, if it is suggested that you are here testifying out of motives of anger or revenge toward the company, what do you have to say about that?

A. Well, I didn't think too much more about it. I continued to do a little research on my own in my own company, which I started after I left. But I did not seek to be involved in these cases. I was asked to do that and I weighed why I should do it and I decided two things:

First of all, matter of public good, because I know -- I still think it is a good idea to have safer products, number one.

And, number two, I believe -- I know other people who represent the issue who will disagree with this, but I believe that this is in the best interest of the industry, because to

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finally have the facts on the table, to be able to talk about them, to be able to move forward on the basis of not having to hide your research, not having to bury documents, get it all out on the table, that's going to move everybody forward and hopefully the product can be sold which is safer, which they can continue to market. Nobody is going to tell them they have to stop and move it ahead.

So I don't think my own personal opinion that I'm doing damage either to the industry and certainly not to the public, because I think we have the opportunity to reduce some of the 300,000 to 400,000 people a year that suffer death prematurely from using these products.

Q. You left the company in the middle of 1984. When did you first come forward and become involved in any of the litigation?

A. No litigation. I was contacted in December of 1983 to provide technical advice on how cigarettes are made by an agency.

Q. Agency, the government?

A. Yes.

Q. Was that the contact what triggered your speaking up on any of these subjects that we have

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heard about today?

A. Well, basically, over a period of '94 and '96, I did approximately what I did today. I answered questions how cigarettes are made, how nicotine is manipulated, things of that sort. And in 1996 that kind of grew a little bit, more and more people got interested in it. I view myself as sort of providing information that I think that people should have.

Q. When you first got involved and told these things that you have told this jury, it was with respect to government agencies?

A. Yes.

Q. And at some point, other lawyers before us have had contact with you and you have come forward and told these things in court situations?

A. My company -- I have got agreement with my company, which is easy, since I own 50 percent of it. I have agreement of my company that this is like a public service thing we do. We are given time to do it and they continue to pay me while I'm coming, so I don't need to ask for any payment while doing this.

Q. I was going to ask you, how much money are you making for being here today?

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A. None.

JUROR SMITH: I'm going to ask, was that '83 or '93 that you were contacted?

MR. GAYLORD: We are not supposed to have direct contact.

JUROR SMITH: Was it '83 or '93? I thought he said '83.

THE COURT: Was it '83 or '93?

THE WITNESS: '93.

MR. GAYLORD: '93.

THE COURT: '93. '93 contacted by the government agency, is that your question, Ms. Smith? It was '93 contacted by the government agency.

MR. GAYLORD: Yes.

THE COURT: All right.

MR. GAYLORD: That would be my presentation for today. I would like to hold hope the possibility about another matter we talked about off the record for tomorrow morning. Otherwise, we might be through.

THE COURT: Sure. Jurors, thank you for your work today. Tomorrow I need you ready to go at 9:15. I'm starting at 8:30 on another matter unrelated to this case. I'm just going

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to continue to be optimistic we can get you into the courtroom about 9:15 or so. 9:15 is your goal for the jury room.

Leave your notes here, please. Don't discuss the case. Let's pray for no snow.

(Open court; jury not present.)

THE COURT: All right. Anything for the plaintiffs for the record?

MR. GAYLORD: We don't have any more information about the video. I may have some in the morning. We will let you know if we do.

THE COURT: Anything for the defense for the record?

MR. COFER: No, Your Honor. At some point we need to take up whether the door has been opened with other products, and I intend to do that.

THE COURT: Come at nine o'clock. If I can get my Taco Bell class action people finished by then, you will have 15 minutes of my time.

MR. GAYLORD: Thank you.

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MR. DUMAS: We will attempt to comply with the Court's request with regard to the exhibits. We should have that by tomorrow.

THE COURT: It was a mere suggestion.

MR. DUMAS: It is a great idea.

THE COURT: I'm saying it would seem to me that you would find it helpful to have a ready reference what is out and what is reserved.

MR. DUMAS: Mr. Beatty and Mr. Coon have had some discussions, I understand, this afternoon, and in order to hopefully present to the Court the orders on the motions in limine, we will have a checklist of the Court's ruling.

THE COURT: That's good. Okay.

How long do you expect cross-examination, Mr. Cofer?

MR. COFER: Probably take a while.

THE COURT: Is that a Kansas City day?

MR. COFER: I doubt I would keep him over until Monday.

THE COURT: Have you seen his file?

MR. DUMAS: No.

THE COURT: Sorry to raise things. I don't want to have any delays for tomorrow.

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MR. GAYLORD: I don't know if he has any specific file to this case. He has files about this litigation generally that I think they have seen. For the most part, it is our exhibits that we dealt with in this case. I'm not sure.

THE COURT: Why don't you confer about it. If there is an issue, let me know. Assume you finish with him sometime in our lifetime tomorrow, you have a reading for the afternoon after this witness?

MR. GAYLORD: Next thing we would try to do would be a reading.

THE COURT: How are you in terms of your schedule at this point?

MR. GAYLORD: We're okay.

THE COURT: Okay. She will accept that representation. We are okay, he says, with the schedule. Very good.

We are off the record now.

(Evening recess.)

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STATE OF OREGON
ss.
County of Multnomah

I, Dennis Apodaca, Official Court Reporter of the Circuit Court of the State of Oregon, Eleventh Judicial District, certify that I reported in stenotype the foregoing proceedings in the above-entitled case.

I further certify that my stenotype notes were reduced to transcript form by Computer-Aided Transcription under my direction.

And I further certify that pages 1 through 144 contain a full, true, and accurate record of my stenotype notes.

Dated this 4th day of March, 1999, at Portland, Oregon.

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Dennis Apodaca
Official Court Reporter

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